NOVEMBER 1995

COMPUTERWORLD CLIENT/SERVER JOURNAL

WHERE DISTRIBUTED COMPUTING MEETS BUSINESS OBJECTIVES

THE TOOLS GAMBIT

THE ODDS ARE STACKED AGAINST ANYONE PLAYING THE APPLICATION DEVELOPMENT GAME

ALSO IN THIS ISSUE:

- OVERCOME R/3 ENVY
- SQUEEZING THE COST OUT OF PURCHASING
- NETWORK PLANNING: FOR THE FEW AND THE BRAVE

TRUE PERFORMANCE IS NOT
MEASURED BY A SINGLE EVENT.

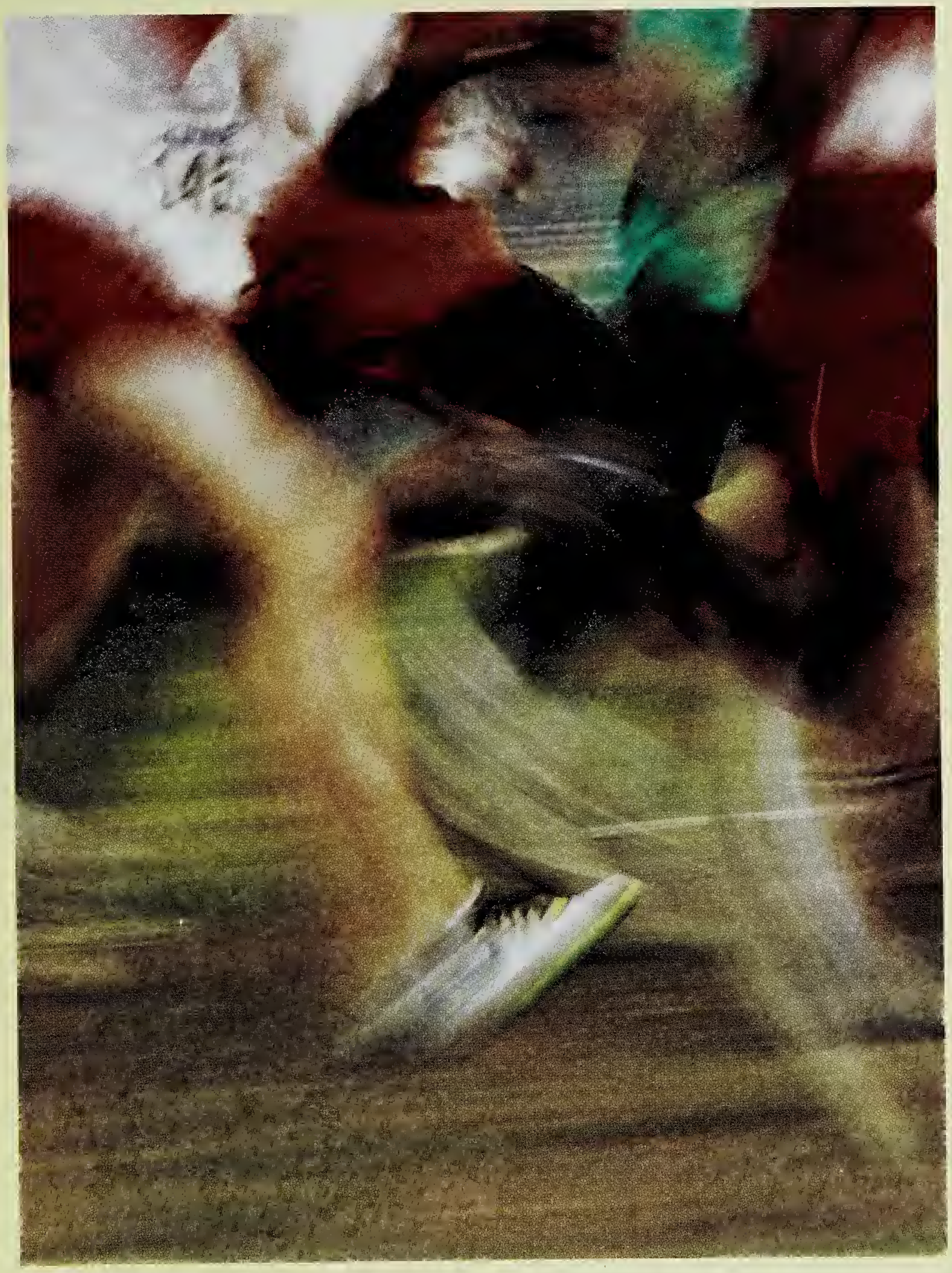
New Sybase
SYSTEM 11™
XI
PERFORMANCE OPTIMIZED
for every level of your business.

Strength. Power. Versatility. They're the qualities of a triathlete. And what you get from new Sybase® System 11.™ It's the only software that lets you perform in all three areas of distributed computing—on-line transaction processing (OLTP), data warehousing and mass deployment.

How does System 11 give you this edge? It gives you a single architecture

©1995 Sybase, Inc. Sybase and System 11 are trademarks of Sybase, Inc. Outside the U.S., call 1-410-224-8044.

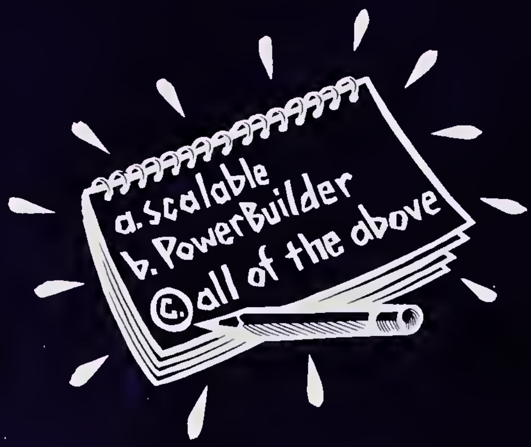
IT IS MEASURED BY THREE.



with optimized solutions—each one built to perform a specific task. So you get the ultimate performance and scalability for OLTP. The fastest query responses from your data warehouse. Plus a small footprint you can deploy places you've only dreamed. And the benchmarks? Record-breaking. For a specific, detailed report, call 1-800-SYBASE-1 ext. 9201. Or check out our Web site at http://www.sybase.com/. You'll find that no one gives you more power in one event. Let alone all three.

SYBASE®
The Architecture for Change™

What do you call a development tool that lets you expand your skills, grow your applications and make the *most* of your investment?

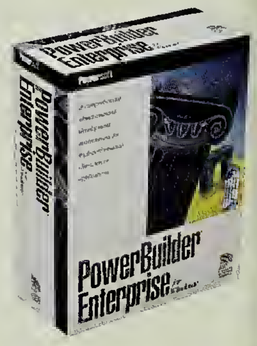


Does your development tool meet these criteria?

Powerful Technology
Open Architecture
Scalable Environment

PowerBuilder® Enterprise is the only development tool in the industry that offers true scalability along with powerful, intuitive technology and a completely open architecture. This scalability allows you to maximize the inherent power of your client/server architecture, your development skills and your technology investment.

PowerBuilder provides open, native database drivers for leading server DBMSs which are tuned to exploit the unique performance features of the database. PowerBuilder's Cross Platform Architecture and common object technology allow applications to be ported seamlessly between platforms so developers can scale up to high end NT and UNIX workstations. For 3-tier development, PowerBuilder's open, extensible environment provides interfaces to the leading middleware and TP monitor technologies. Intuitive enough for desktop development and robust enough for building large scale applications, PowerBuilder meets virtually all of your development needs. So make the most of your applications, your skills and your investment. Scale up to PowerBuilder. For more information or to see PowerBuilder for yourself at one of our seminars, call 1-800-395-3525.

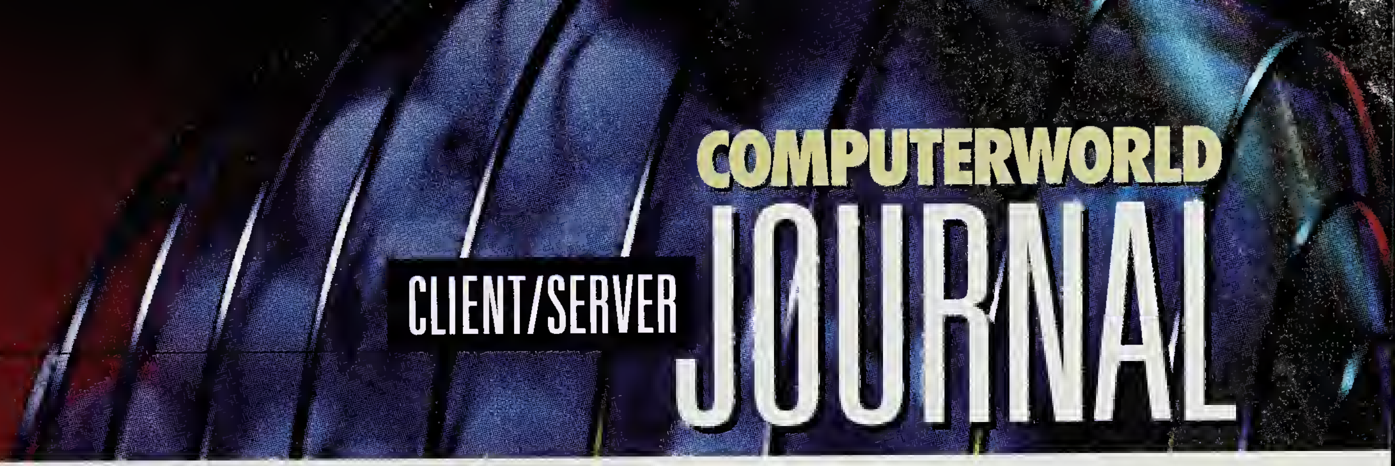


Powersoft®
Building on the power of people.

POWERSOFT IS THE OPEN TOOLS DIVISION OF SYBASE.
Powersoft Corporation, (508)287-1500. http://www.powersoft.com/ Powersoft Europe Ltd., United Kingdom, +44 1494 555555. American Powersoft Corporation Pte Ltd., Singapore, +65 338-0018. All trademarks and registered trademarks are property of their respective owners.

CONTENTS

NOVEMBER 1995



COMPUTERWORLD
CLIENT/SERVER JOURNAL

COVER STORY

THE TOOLS GAMBIT

28 The client/server tools market is a crazy place right now. You've got your model-driven tools offering object-oriented features. And you've got your 4GL players grafting componentization techniques into their development suites. And you've got a whole host of other approaches in between. How many of these hundreds of companies can survive? As the market moves upstream to three-tier platforms, most believe a shakeout is inevitable, which makes choosing best-of-breed tools for the long term a difficult task. But tool selection isn't everything. "The key is not so much the who; it's the how," advises Curt Monash, president of Monash Information Services in New York. In other words, emphasize open design so you can separate the application from the underlying product, if need be. *By Computerworld Client/Server Journal Staff*

COVER ILLUSTRATION BY JOHN WILKES

APPLICATION PACKAGES

Administering The R/3 Rx

18 Do you have R/3 envy? Feeling SAP'd by peer pressure? No wonder: The enterprise client/server software provider has Fortune 500 CEOs bright-eyed with visions of flexible, money-making machines. But as implementations drone on and millions of dollars get spent, even happy customers such as 3Com's Marina Levinson (right) wonder when they'll reap rewards. *By Rochelle Garner*

VERTICAL MARKET: BROKERAGE

Wheeling And Dealing With Derivatives

24 It's difficult enough to understand what derivatives are, let alone build them, determine their value and manage them. Witness the portfolio disasters at Orange County, Calif., The Mead Corp. and Barings PLC. To keep up with a derivatives market that has swelled to more than $18 trillion this year, trading firms are racing to build more elaborate and sophisticated client/server systems. *By Thomas Hoffman*

CAPACITY PLANNING

Network Planning: Not For The Faint Of Heart

38 So you're implementing Notes and you want to know how it'll affect your complex, volatile, distributed network. Sound impossible? It's not, with today's network modeling tools. It's just very complex and expensive ($30,000 to $50,000 per modeling system), plus it can take months to collect all the necessary topology and traffic data (if you can even find it). *By Elisabeth Horwitt*

COMPUTERWORLD
CLIENT/SERVER JOURNAL

EXTENDED ENTERPRISE: PROCUREMENT

Taking The Bite Out Of Purchasing

44 What does the word "purchasing" call to mind? If you said bureaucracy, you're in the majority. Large companies have historically thrown money at paper-intensive procurement. But trendsetters are using CD-ROM catalogs and EDI to change that. *By Linda Wilson*

PERSPECTIVES

Understanding Wired Customers

47 As firms extend client/server technology outside the organization and strive for electronic intimacy with customers, they must deal with two cultures at once: the IT culture and the wired consumer. *By Jonathan Vaughan*

DATA QUALITY

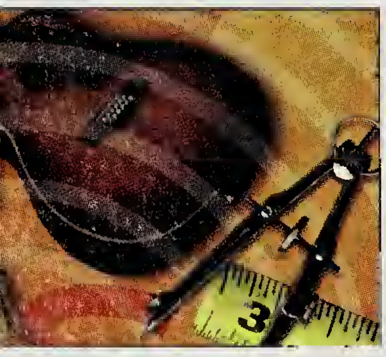
Mister Data Clean

48 Any company that's made major changes to its business systems knows how messy legacy data can be. But few realize the resources required to clean it up. It took Chase Manhattan about 80 man-years and 22 people over four years to clean 20 million customer records. *By Tony Baer*

INTERVIEW

An Open And Shut Case

52 Does DCE have a future? Yes, says Ram Sudama, chief technologist at Open Environment Corp. — at least until something else provides the same level of openness, security, robustness and scalability. He calls his firm's tools "intelligent middleware" because for starters, they support application logic partitioning and a variety of programming languages. *By Alan Alper*



CAREERS

Weird Passages Into IS

55 There's a reason the Rolling Stones helped promote Windows 95 — there's a lot of synergy between musicians and techie types, not to mention architects and other professions. In fact, having a previous career can help you deal with some of the idiosyncrasies of IS. *By Willie Schatz*

INSIGHTS

11 PULP FRICTION FOILED
Paper products company Weyerhaeuser is pulling itself together with an integrated client/server maintenance system.

12 NO PLACE LIKE HOME (PAGE)
Intranets — internal home pages that an organization uses as groupware or bulletin board systems — raise many cultural and organizational issues.

13 PROJECT PERISCOPE

QUICK TAKES

63 WHIRLING WITH WIN 95
What you should do if self-professed power users start implementing Windows 95 before your company is ready to support it.
By Jeremy Schlosberg

PERSPECTIVES

16 TO TEST OR NOT TO TEST
There are lots of reasons to test client/server systems — GUI trouble, politics and interfaces.
By Shaku Atre

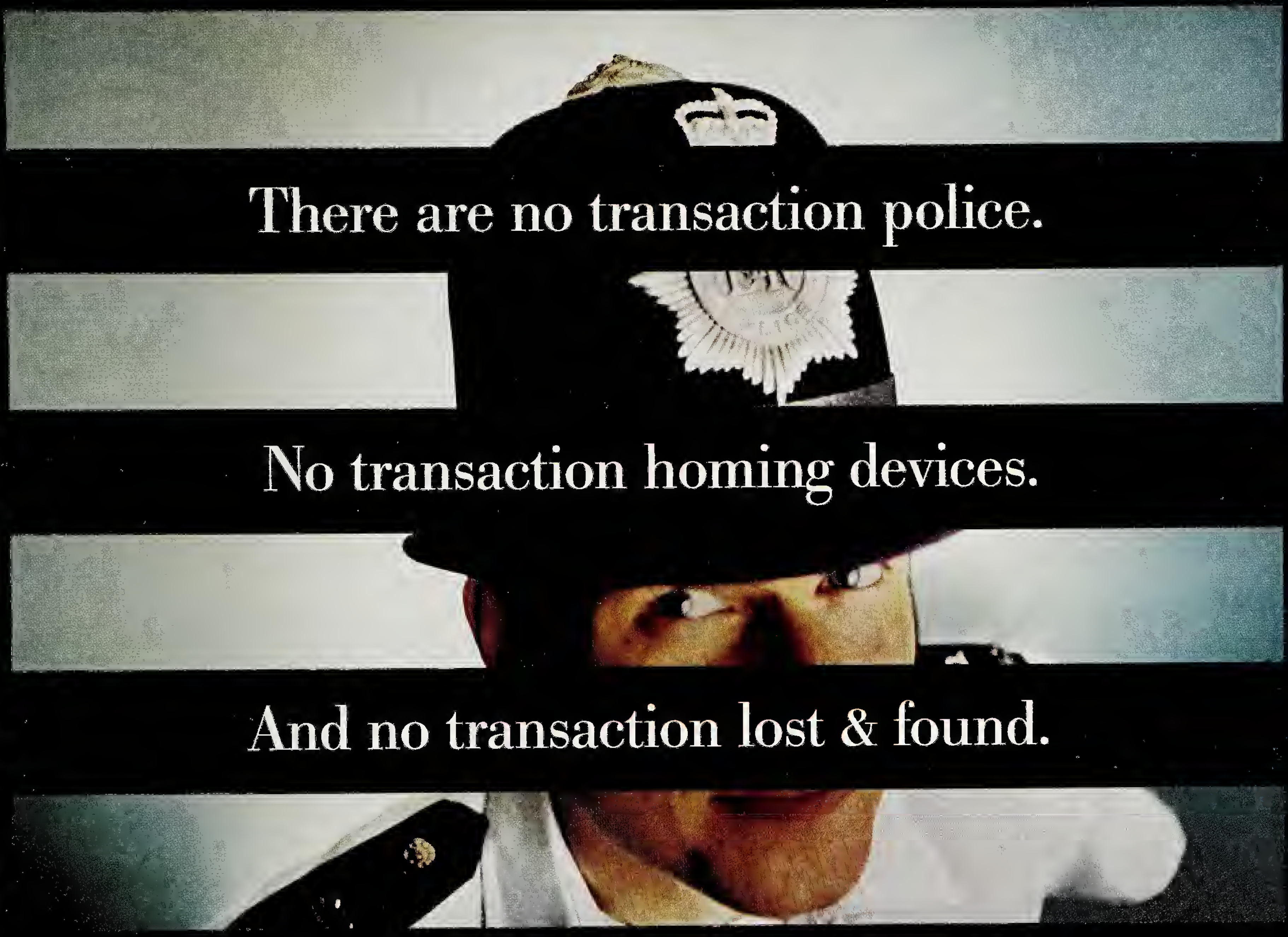
36 INSANE EXPECTATIONS
If you really want RAD and reuse, look to the source: the development process.
By Jim Stikeleather

WHAT'S NEW

57 FIRING LINE
Development tools from Forte and Dynasty. *By Kevin Burden*

60 NEW PRODUCTS
PowerBuilder add-ons, visual developers, three-tier tools and repository-based development. *By Carla Catalano and Mary Brandel*

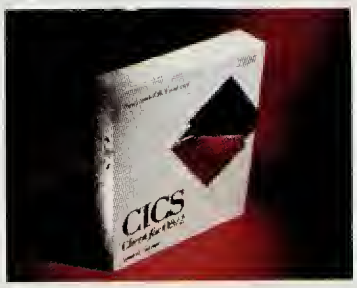
7 EDITORIAL
8 MAIL
62 COMPANY INDEX
64 BACK PAGE


There are no transaction police.
No transaction homing devices.
And no transaction lost & found.

Fortunately, you don't need them.

There's no cause for alarm. Your transactions are secure, and always will be now that CICS™ is available for client/server environments.

You'll still get all of the same transaction processing capabilities with the rock-solid performance that many of the world's leading companies rely on for their most critical data.



Only now, these tools will be working even harder in client/server on DOS, UNIX®, Windows®, OS/400®, OS/2® and MVS/ESA.™ As well as databases including SYBASE®, Informix®, ORACLE®, and of course, DB2.®

Can your software do this?

And let's not forget the latest user-oriented services like the Internet and Lotus Notes.® CICS manages and protects entire business transactions, containing multiple data requests, throughout all of these systems.

It removes yet another level of complexity by letting you develop multiplatform apps with a single programming interface. All of which will eliminate those awkward compromises in your business network design.

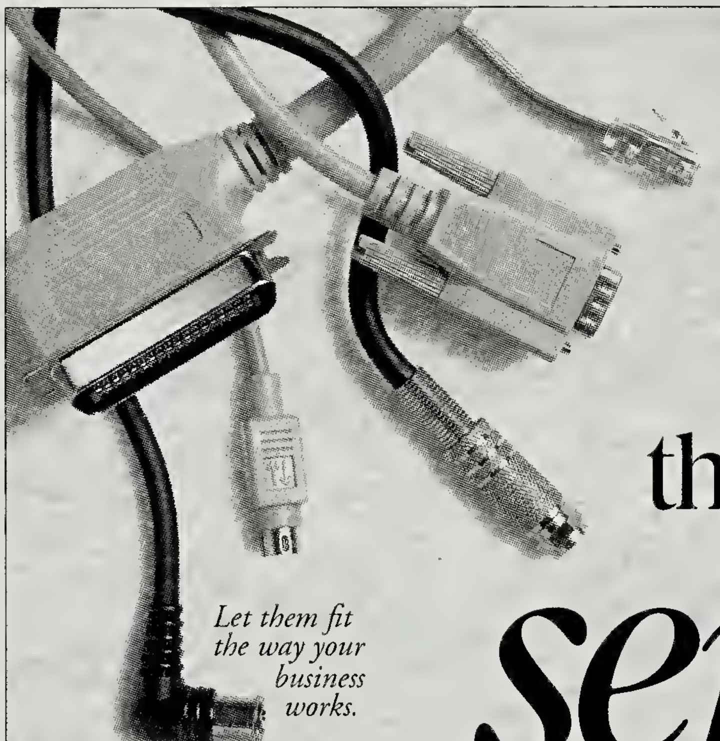
To protect and safeguard all of your data today, give us a call at 1 800 IBM-3333, ext. DA 106. Or visit our site on the web at http://www.raleigh.ibm.com/netad.html for more details.

You've got nothing to lose if you do. And quite a bit to lose if you don't.

IBM®

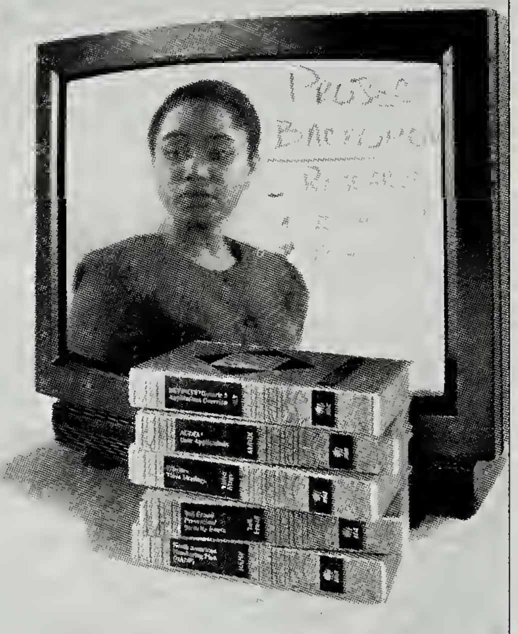
Solutions for a small planet™

In Canada, call 1 800 CALL-IBM, ext. 219. The IBM home page is located at http://www.ibm.com. IBM, DB2, OS/400 and OS/2 are registered trademarks and CICS, MVS/ESA and Solutions for a small planet are trademarks of International Business Machines Corporation. All other company and/or product names are trademarks or registered trademarks of their respective companies. © 1995 IBM Corporation. All rights reserved.



Let them fit the way your business works.

You've **got** the phones, *PCs,* ***servers,*** LANs *and* WANs. Now, let's ***talk about*** what you ***need.***



Master new ways.

Sleep peacefully through a 2 a.m. system alarm.

Let's face it. The real point of having all that stuff is so it can work together to let your people do more. And get the *results* you need.

The AT&T Service Advantage can help make it happen. By fitting your communications hardware and software together like fingers in a glove. Constantly monitoring your systems. Providing nationwide support around the clock. And training your people to give them the confidence to use what you have.

Because when people know how to make technology work, they use it to their advantage. They can focus on what needs to be done, instead of how to do it. They work the way they *want* to, instead of how they have to. And they make great things happen.

So call AT&T Global Business Communications Systems at 1 800 325-7466 ext. 774. And let's talk about making great things happen for *your* business.

AT&T. Where innovation leads.

AT&T

© 1994 AT&T

COMPUTERWORLD
CLIENT/SERVER JOURNAL

EDITOR
Alan Alper
MANAGING EDITOR
Catherine McCrorey
SENIOR EDITOR
Mary Brandel
ART DIRECTOR
Stephanie Faucher
COPY EDITOR
Kimberlee A. Smith
CONTRIBUTING WRITERS
Tony Baer
Kevin Burden
Carla Catalano
Rochelle Garner
Thomas Hoffman
Elisabeth Horwitt
Avery Jenkins
Jeremy Schlosberg
Willie Schatz
Linda Wilson
CONTRIBUTING COLUMNISTS
Shaku Atre
Atre Associates, Inc.
Jim Stikeleather
The Technical Resource Connection
Jonathan Vaughan
Chase Manhattan Bank NA
COMPUTERWORLD EDITOR IN CHIEF
Bill Laberis
COMPUTERWORLD EDITOR
Paul Gillin
ASSOCIATE PUBLISHER
Jim Hussey

LETTERS TO THE EDITOR:
Computerworld
Client/Server Journal
500 Old Connecticut Path
Framingham, Mass. 01701-9171
(508) 879-0700
Internet: alan_alper@cw.com
CompuServe: 72303,1037
EDITORIAL ADVISORY BOARD
Judith Hurwitz, *President Hurwitz Consulting Group*
Eric Singleton, *Director of IS AlliedSignal Technical Services*
Jonathan Vaughan
William Zeitz, *President Zeitz Consulting*

Editor's Note

ALAN ALPER

"It's anarchy. Everyone is buying everything." That is how one veteran IS executive sums up the client/server application development tools business today.

And no wonder. As our story on page 28 says, there are hundreds of tools vendors offering an assortment of standalone specialty products and fully integrated suites all banging heads with one another for market differentiation and — ultimately — a clear line into your pocketbook.

What's a discerning person to do?

Certainly, picking the right set of tools is not easy. No one wants to set off a volcano of "onesie, twosie" purchases; organizations today prefer to establish a set of standards in order to harness their investment in distributed systems.

And clearly, few can afford the technological and personnel investment in a tools strategy devoid of rhyme and reason. Yet no one wants to stave off experimentation that many of the emerging tools provide.

How do you attenuate the risk? First, you need to read the market very carefully. Today's lesser known pioneers may be tomorrow's household names — or they could implode in a fiery ball of polymorphic objects.

You also need to understand your business objectives, and examine the tools that can build applications that deliver on those objectives.

Examine the underlying technology to see whether it's extendable in the event the vendor stubs its toe. Scour whatever financial information is available. All the while, remain mindful of whatever development standards (languages, compiled code requirements, repository structure, class libraries) you've established.

Perhaps most important, your development technique needs to allow for the separation of the tool from the application (meaning you could sub in another tool if you had to).

Easier said than done. Especially as three-tier tools are still at the experimental stage (see review of Forte and Dynasty, page 57) and even middleware vendors enter the development arena (see interview with Ram Sudama of Open Environment Corp., page 52). Things may get simpler as we move toward componentization. But that's only if cross-platform standard widgets evolve and desktop objects can be built to work seamlessly with those on servers across the enterprise.

In any case, the number of vendors is certain to diminish. As standards emerge, markets become commoditized — one look at the consolidation of the networking field reinforces that notion. It's not a question of if but when.

Alan Alper

INTERNET: alan_alper@cw.com

IN SEARCH OF EXCELLENCE

Are you excelling at client/server? Client/Server Journal wants to know. We will be honoring exceptional distributed computing achievements in our second annual "Excellence In Client/Server" special report, to be published in June 1996. Visit our World Wide Web site at http://www.computerworld.com for our quickie questionnaire — look for the "About Client/Server Journal" page under the "About Computerworld" section.

PHOTOGRAPHY BY JACK FOLEY; COLORIZING BY LARRY GOODE

Mail

HAVING JUST READ “REPLICATION Mania” in the October issue, I was disturbed to find it misleading and lacking in substantive content. The Missing Features section mentioned that Microsoft’s SQL Server doesn’t work with multiple architectures. There is no mention that Oracle and Sybase do work with multiple architectures. Nor was there a discussion of how various replication servers work internally. No discussion on performance. The article struck me as filler for the magazine.

STEVE PRINGLE
Senior consultant
Context Integration
pringle@lindy.stanford.edu

Editor’s reply: Sounds like a good idea for a follow-up article. This piece was not intended to provide brand-by-brand comparisons. It pointed out only the database with the least cross-platform replication support (Microsoft’s SQL Server). Oracle and Sybase do indeed support multiple architectures but not all the ones users would like.

NOW THAT CLIENT/SERVER IS several years old, those who will remove their blinders can indeed see the light. The truths revealed in your special June 1995 issue of *Client/Server Journal* were most illuminating. I must say that if these are the companies that have excelled, I would hate to have implemented a client/server system that was merely mediocre, let alone one at the bottom end of the excellence bell curve.

I maintain that getting a grip on client/server expenses is impossible. In “Gassed up to Compete,” you agree by reporting that the “system’s benefits are difficult to quantify.” In “CIOs and Rocket Scientists,” we see how people who used to discuss the problem of the week are now talking about their computers. In other words, they are now spending some unquantifiable amount of time (read: money) doing the job that used to be done by the IS department.

Almost without exception, your 20 top companies talked about anticipated savings and benefits to be enjoyed at some undisclosed point in the future.

In summary, I find the tone of your magazine *unbelievable*! Your bias toward distributed computing solutions is irresponsible. Our experiences continue to prove that as far as large companies with several hundred users are concerned, client/server will cost them a premium, when a centralized solution was superior to begin with.

JOHN NARCISO
Senior consultant/instructor
ACTS Corp.
Marble Falls, Texas
76405.1417@compuserve.com

Editor’s reply: Our mission is to analyze how organizations are struggling to make distributed computing work and where these systems are falling short.

You’re right: The costs of distributed computing are difficult to quantify, and the fantasy of quick and easy cost reduction should not be a driving factor.

The return on investment can be intangible (see CSJ October, “The New Value Brokers”). But let’s face it: Similar complaints have been aired about centralized systems for 30 years.

Has it been a tough journey? Yes. Will it continue to be? For sure. But just as centralized, host-based computing was appropriate for the business climate of its time (and still is for certain process-intensive tasks), distributed platforms are appropriate for the quick-changing, global, increasingly wired business climate of tomorrow.

YOUR MISSION TO BALANCE STYLE with substance (quoting from your response to an unhappy reader in the August 1995 Letters section) is certainly not a mission impossible. In fact, your magazine achieves it to such a degree that I find myself reading it cover to cover and then reviewing many articles a second time, taking quick notes along the way for future research.

MARCI NORRIS
Director
Management Advisory Systems Corp.
Hollywood, Fla.
CompuServe: 102766,1743

Computerworld Client/Server Journal *will publish letters on relevant client/server computing issues. Letters will be edited for brevity and taste. Write Editor Alan Alper at 500 Old Connecticut Path, Framingham, Mass. 01701, or send him a letter via the Internet at alan_alper@cw.com or via CompuServe at 72303,1037.*

COVER ILLUSTRATION BY JOHN WILKES

THE ROAD TO DATA WAREHOUSING SUCCESS IS PAVED WITH THE SAS® SYSTEM.

SOFTWARE WITH EVERYTHING YOU NEED TO MANAGE, ORGANIZE, AND EXPLOIT A DATA WAREHOUSE

As the only provider of a complete end-to-end data warehousing solution, SAS Institute is with you at every turn, including:

THE BACK END: ACCESSING CORPORATE DATA

The first step in building a data warehouse is accessing operational data from wherever it resides, and in whatever format. The SAS System provides a powerful 4GL coupled with access methods that tap directly into a variety of legacy databases. More than 50 different data structures across more than 15 diverse computing environments, from PC files on the desktop to DB2® on the mainframe.

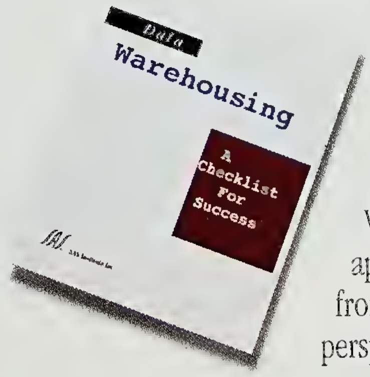
MANAGING THE DATA: PREPARING FOR BUSINESS ANALYSIS

Once accessed, data must be transformed into a consistent, integrated form. The SAS System cleans, reconciles, de-normalizes, and summarizes data. Then, it loads data into logical views that can be surfaced into a variety of analytical and reporting applications.

THE FRONT END: EXPLOITING THE DATA

Once data arrive in the warehouse, an arsenal of capabilities is available for querying, analyzing, and reporting on that data. These tools include OLAP/multidimensional analysis, data visualization, information and presentation graphics, forecasting, operations research, financial management, and more.

PLUS A FREE CHECKLIST TO GUIDE YOU



Building a successful data warehouse requires careful planning. Luckily, information managers everywhere can have the facts at their fingertips with SAS Institute's *Checklist for Data Warehousing Success*. We've included practical tips for approaching data warehousing from corporate, business, and IT perspectives.

To receive your free *Checklist*, give us a call or send us e-mail at csjournal@sas.sas.com

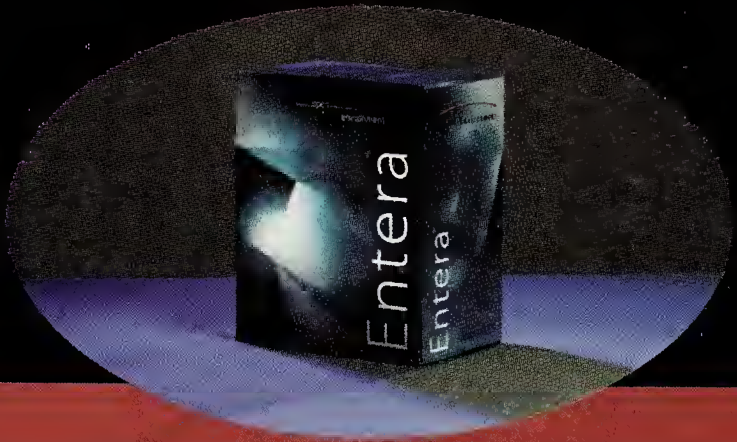
SAS®

SAS Institute Inc.
Phone 919-677-8200
Fax 919-677-4444
World Wide Web: http://www.sas.com/
In Canada: 1-800-363-8397

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1995 by SAS Institute Inc.

Middleware.

Intelligent Middleware.



Introducing Entera Intelligent Middleware

Entera™ eliminates the frustration of building client/server applications because it is intelligent enough to automatically generate code for connecting everything in your distributed client/server enterprise. Entera goes beyond merely connecting your GUIs, databases and mainframes, allowing you seamless and automatic integration of your applications, workgroups and even the Internet. Your choice of middleware is the single most strategic decision you can make, so make it a smart one.

Call us for a free tutorial and white paper on Entera Intelligent Middleware.
1-800-826-1047 ext.200.

Open Environment

Distributed Computing That Works.

INSIGHTS

A REVIEW OF CLIENT/SERVER VIEWS AND EVENTS

Pulp Friction Foiled

Weyerhaeuser business units get second chance with client/server

Equipment maintenance, parts purchasing, inventory tracking — they're dirty but vitally important jobs. Emergency shutdown can triple a manufacturer's repair costs and hideously blot the bottom line.

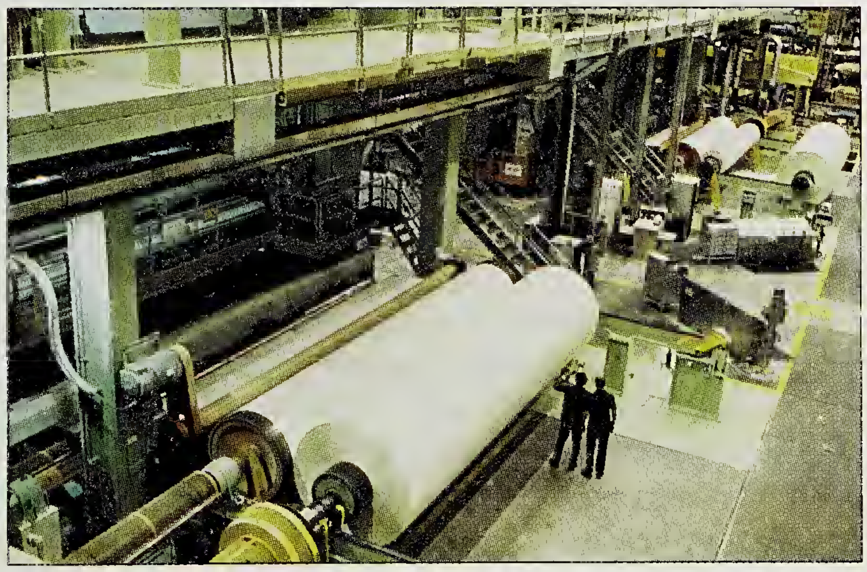
Rewind to Weyerhaeuser Corp., circa 1991. Maintenance was costing the $11 billion timber and paper products firm an immeasurable amount of time, money and effort. Poorly kept records rendered preventive maintenance a pipe dream. Parts purchasing was awash in often redundant paper.

"There was a saying that if a company could build something for half a billon dollars, Weyerhaeuser could build it for a billion!" said Michael Shea, research director at Charter Investment Group, a Portland, Ore., brokerage.

Further, a string of acquisitions was diluting the 95-year-old company's resources. Expansion had led it to use more than 20 financial and maintenance packages.

Weyerhaeuser's remedy: Exit all nonwood markets; adopt best practices and standardized processes; and construct a distributed systems architecture.

To increase consistency and information sharing, Weyerhaeuser tapped Maximo, a client/server package from Project Software and Development, Inc. in Cambridge, Mass. The system provides Windows PC access to work order, scheduling, maintenance history and parts-tracking applications over a fiber-optic wide-area network at 55 North American sites.



Preventive maintenance was, until recently, a pipe dream

Maximo runs on Gupta Corp. SQLbase database servers and is integrated with the firm's accounting system. "For some business units, this will make a difference if they stay in business or not," said Dick Kuehn, information systems program manager.

Already, maintenance managers are able to anticipate service needs. When a yarder (a 100-ft-high log mover) experienced continual brake problems, mechanics examined past work orders and found that the pressure setting was too high. "When a yarder goes down, that's $15,000 a day we can lose in [productivity]," said Lee Martin, a maintenance supervisor.

The pressure regulator is now regularly checked to prevent outages. Plus, preventive maintenance is helping to keep the mills at 92% uptime.

While it's hard to measure Maximo's direct impact, Weyerhaeuser saw a 167% spike in quarterly earnings over the past year. However, "they're still not as good as the best companies in their class," Shea said. ◪

—*Alan Alper*

BUZZWORDS

A compendium of recently generated buzzwords:

MIDBAND: Microsoft's word for telecom speeds that are faster than phone lines but slower than broadband networks, such as ISDN.

REPORT MINING: Coined by Gartner Group, Inc. for migrating legacy report data to a server so it can be accessed by desktop query tools and regenerated into a new report.

SOFT COPY: Old legacy systems term reapplied to distributed computing in which reports are created on-screen from data residing within different applications.

ILLUSTRATIONS BY BILL FRAMPTON

on location

SCORING A TOUCHDOWN

On the software gridiron, Symantec Corp.'s Enterprise Developer 2.5 team won the Client/Server Superbowl at last month's Software Development '95 East conference in Washington. Team Enterprise Developer 2.5 trounced its competition, which comprised Borland International, Inc.'s Delphi, Oracle Corp.'s Developer 2000, Powersoft Corp.'s PowerBuilder 4.0 and IBM's Visual Age SmallTalk, by scoring the highest, with a total of 34 points. The closest competitor finished the game with 29 points. The contest was designed to test the power, flexibility and rapid application development capabilities of these client/server tools. The teams were asked to design a pizza delivery system in one hour.

GOING POSTAL

What do you suppose is the most common security intrusion on the Internet? The so-called mail bomb, said Bill Hancock, executive vice president at Network-1 Software and Technology, Inc., a firewall provider and Internet consultant in New York. With a mail bomb, an intruder overwhelms your World Wide Web server with countless mail messages, potentially bringing your network to a grinding halt. A firewall can't help the Web server, but it can protect the internal network from crashing.

There's No Place Like Home (Page)

In-house Web sites pose hidden challenges

Are security and legal concerns keeping you from putting a home page on the World Wide Web? Perhaps, like an increasing number of companies today, you should consider a Web site that never ventures beyond the corporate firewall.

The rise of the corporate "intranet" — a Web server that runs over a LAN and enables employees to share documents and resources — has begun, according to Business Research Group in Newton, Mass. A survey of 169 medium-size and large companies found that 23% of sites have implemented or plan to implement the Web internally.

Implementing an intranet is more than just deploying a Web site internally to gain experience with the Hypertext Markup Language (HTML), which is how 80% of Web servers are initially deployed, said Tim Sloane, an analyst at Aberdeen Group in Boston.

An intranet is made when the company continues to invest in the internal home page, creating corporate bulletin boards and even groupware systems. It requires giving end users a Web browser and an HTML tool and allowing them to construct and link documents.

Of course, there's a catch. Although analysts and users could think of few reasons for not experimenting internally with the Internet, pioneers warned of cultural, maintenance and administrative challenges along the way.

One question is, who's going to publish and maintain accuracy of the information, said Jeanne Huling, senior project manager at JC Penney Co. in Plano, Texas. The retailer publishes announcements, training manuals and the like on its intranet.

Assigning one person to the task is one method. But, Sloane said, "that's doomed to failure if [that person] is responsible for maintaining information that he doesn't have the authority to get."

The problem, Sloane said, is that data management on the Web is not automatic as it is, say, in Lotus Development Corp.'s Notes. In fact, he said, you could potentially manage the data with Notes and use Lotus' InterNotes gateway to publish Notes views on the Web. "That's the $800 gold-plated hammer," Sloane said.

In the near future, though, there will be tools that can wrap around anybody's Web server and help assign responsibility for data and track the status of links, he said.

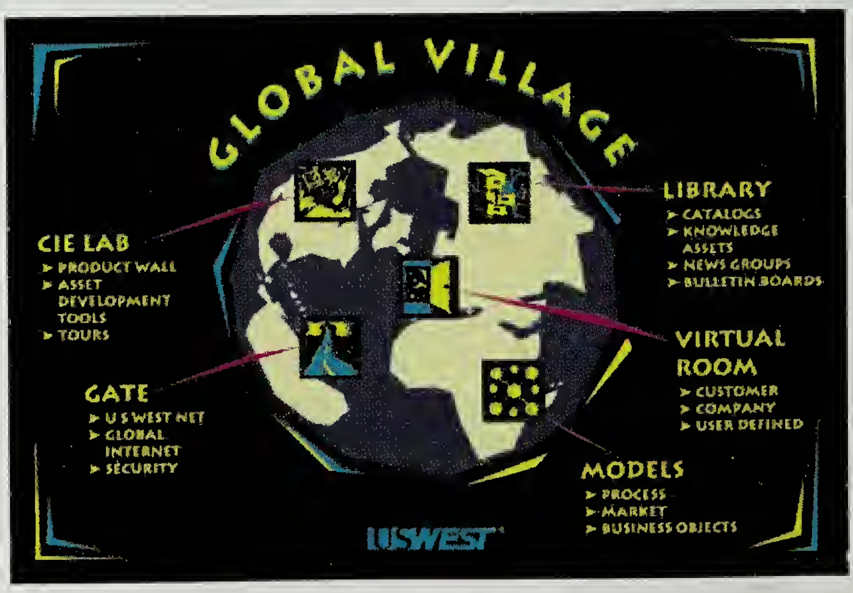
But the real gotcha is the cultural issues that can arise, said Sherman Woo, director of the Global Village project at US West Communications, Inc. in Denver. The Global Village is an in-house-built collaboration application that runs on a corporatewide TCP/IP network, accessed via hypertext browsers and run on hypertext transport protocol servers.

With it, US West is trying to move toward being a "learning organization" in which employees access information in order to make better business decisions. But in a company as large and traditional as US West, that does not come naturally.

For instance, Woo is trying to get the entire company to share an employee data sheet that describes who employees are, what projects they're working on, what their skills are, etc. "I want to keep it continually updated so that the rest of the organization can find you when they need to have your skills and experience. It's a whole different way of managing work," he said.

Because of budget constraints, the staff that does this is actually very small at US West. Woo sees this as a plus. "It forced us to find ways to provide easily accessed information. In so doing, we were able to nurture an environment without threatening anyone's jobs." ◪

— Mary Brandel



ILLUSTRATIONS BY SUSAN KWAS

PROJECT PERISCOPE

A quick glance into client/server developments at user sites nationwide

THE FUTURE'S SO BRIGHT . . .

With growth rivaling the speed of light, Brightpoint, Inc. needed an order fulfillment system that could keep up. The Indianapolis-based wholesale distributor of cellular phones had already grown its sales force from four reps to about 26 to handle increased revenue of more than 1,000% in six years. The company chose supply chain management software from FourGen Software, Inc. for its modifiability in setting up defaults and parameters. Brightpoint began installing the system, which includes accounts receivable, accounts payable and general ledger modules, in early July and plans to go live Jan. 1. The applications will run in conjunction with an Informix Software, Inc. relational database on a Sun Microsystems, Inc. server. With information such as order and fulfillment status available from desktop PCs, managers can use FourGen's visual decision-support tools to spot sales trends. In-house reps will have access to all data using menus on dumb terminals, while remote reps can dial in using laptops. More decision-making ability in management's hands means reps spend less time making inventory decisions and more time selling.

REPS REAP THE REWARDS

American Cyanamid Co. in Wayne, N.J., realizes ignorance is anything but bliss when it comes to its sales reps. That's why the agricultural chemical supply company is providing its 35+ telesales reps in Des Moines and 300+ field sales reps with a harvest of data on U.S. growers and dealers. American Cyanamid is rewriting its marketing fulfillment application with Oracle Corp.'s Oracle7.1 and moving the database to a Compaq Computer Corp. ProLiant 1500 server. As of Nov. 1, the telesales group can query against this comprehensive database of more than 1 million U.S. farmers over a wide-area network from desktop 486 Windows-based PCs to answer customer product inquiries more quickly and accurately. The application will automatically schedule follow-up calls to determine customers' order status, track problem areas and perform statistical analyses on incoming calls. Field sales reps will finally be given on-line rather than paper access to grower information on Dec. 1. By dialing in to the Compaq server from Windows 95-based notebook PCs, reps will be able to download Oracle7.1 data into a local Microsoft Corp. Access database of products, pricing and customer contacts. Field reps are supported by a sales force automation application being rewritten using Borland International, Inc.'s Delphi rapid application development tool. The result: application screens with clearly marked tabs so even a novice rep can navigate the menu fields.

SINKING ITS TEETH IN

Nabisco, Inc. wants its food products to taste good. Knowing how well its Oreo cookies or Ritz crackers are selling is a good indicator. But to ensure the profitability of its 5,000+ products, the Parsippany, N.J.-based company needs to allocate manufacturing and advertising costs, for example, in a timely manner to customer accounts. So Nabisco chose Essbase from Arbor Software Corp. in Sunnyvale, Calif. The Essbase product tracking and forecasting database runs on dual-processor Compaq Computer Corp. ProLiant servers. About 35 users are now using Microsoft Corp.'s Excel to access the Essbase database from desktop PCs, but Nabisco expects to have more than 200 users on-line by first-quarter '96. Analysts will be able to use Essbase's multidimensional capability to see products geographically, perform what-if scenarios, view profit margins by customer and analyze customer profit and loss. Information that used to take analysts at least 60 minutes to provide can now be delivered in less than five minutes.

— Kimberlee A. Smith

on location

YOU SNOOZE, YOU LOSE

At the Software World Client/Server Software Developer's Conference, Larry DeBoever of DeBoever Architectures in Acton, Mass., shared his views on 1996 client/server winners and losers. Winners: IBM — it understands objects better than anyone else; Win 95 and NT — the best doesn't always win; Unix and X/Open on the server; 100M-byte Ethernet; and Internet for business. Losers: Novell — the architecture isn't up to snuff; 9,980 of the 10,000 Windows application tools vendors; Apple; OS/2 on the desktop; and Microsoft's Cairo.

DO YOU KNOW WHERE YOUR SERVERS ARE?

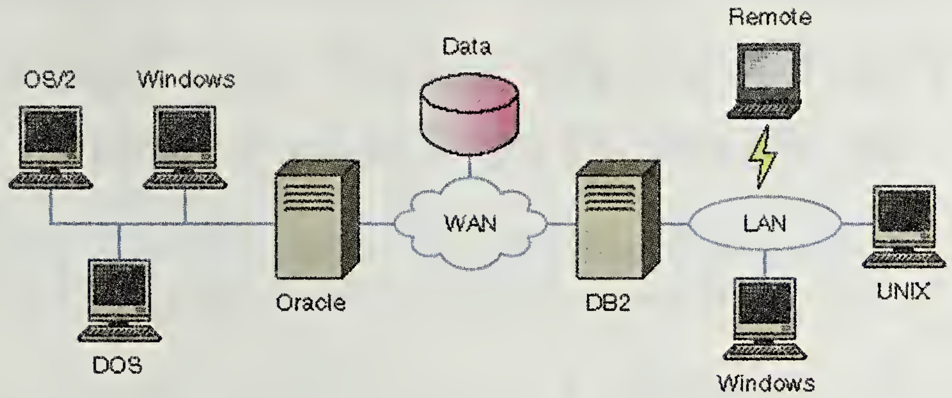
With the popularity of Notes and Web applications, it's more important to track how far away referenced servers reside. Ask Novell. When it standardized on the WordPerfect word processor (after merging with WordPerfect), it distributed the software to employees, including 1,000 users in California, from a server in Orem, Utah. "We ended up paying AT&T lots of money for that," said Bob Pratt, product manager at Novell. "We should have put it on a [California] server."

NOT YOUR FATHER'S CADILLAC

Says Steve Mills, IBM's Software Solutions Division GM: If the Cadillac's price/performance had improved over the past decade as much as the microprocessor's, the car would today weigh 40 pounds, be four feet long, operate at the speed of sound and cost $30.

ILLUSTRATIONS ABOVE LEFT BY BILL FRAMPTON;
ILLUSTRATIONS ABOVE RIGHT BY SUSAN KWAS

You're on the brink.
Ready to plunge into client/server.
You've got a few butterflies.
And plenty of questions.
Fortunately, thousands have done it before.
8



And we can show you their blueprints.

The challenges of adopting the newest technologies are well documented. Fortunately, so are the secrets of doing it successfully.

IBM has helped companies all over the world design and implement multivendor client/server systems. Systems that enable them to gain a competitive advantage, adapt to change and get closer to their customers. And we're very eager to share what we have learned.

Can your computer company do this?

That's not to say we can transform your company overnight. But by arming you with the right knowledge, we can definitely make the process more efficient.

We've documented the experiences of hundreds of companies in our Client/Server Advisor. It's an extensive Lotus Notes®-based library of proven solutions that demonstrates how others have solved many of the problems you face, and illuminates the potential pitfalls. This resource lets you look at the challenge from every angle, to find real solutions that enhance the way your business does business.

Even better, we're prepared to dive in with you, putting knowledge into action. IBM is committed to a variety of open standards, so we can help maximize your current investments and integrate the new technology you need. Whether it's made by IBM or anyone else. The goal is to design a system that can change and adapt as quickly as your business.

To reap the benefits of our experience, call 1 800 IBM-3333, ext. JA110. Or visit our web site at http://www.csc.ibm.com to see how we've helped others meet the challenges of client/server. Before you make the leap.

IBM

Solutions for a small planet™

Outside North America, please contact your local IBM office. The IBM home page is located at http://www.ibm.com. IBM, DB2 and OS/2 are registered trademarks and Solutions for a small planet is a trademark of International Business Machines Corporation. All other company and/or product names are trademarks or registered trademarks of their respective companies. © 1995 IBM Corporation. All rights reserved.

To Test or Not to Test Is Not the Question

Unless you want to run the risk of rewriting code — or worse — testing client/server systems should not be optional

BY SHAKU ATRE

How much testing should a plane flying a kamikaze mission undergo before takeoff? No more than necessary, and maybe none at all. Given the tendency for companies to deploy untested kamikaze client/server systems, it would seem many organizations want to crash and burn.

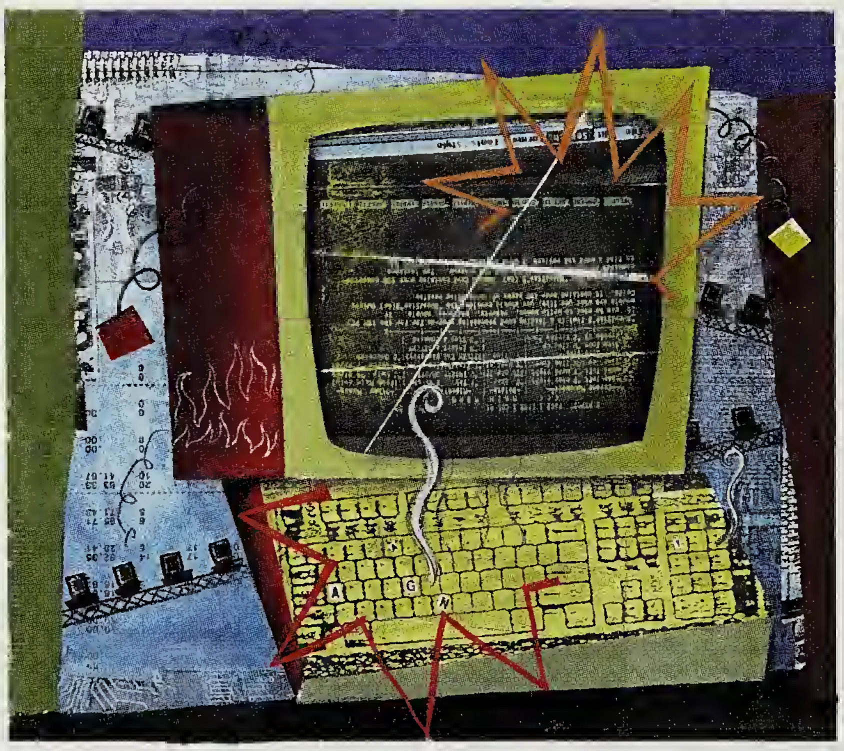
In a recent situation, a company released a client/server order-entry system, virtually untested, to end users. The inadequate testing led to so many problems that users judged the system to be unacceptable, according to a consulting company called in to help test the system's follow-on version.

The failure of this first system version put IT 10 months behind schedule, and several IT staffers were dismissed. By missing several deadlines, IT lost credibility with users. And because the code was written to the wrong requirements, much of it had to be rewritten at great expense.

As this case shows, there are many reasons why client/server testing is not optional. The following are some risk factors that make client/server testing, preferably using automated testing tools, so important.

GUI troubles. With a graphical user interface, the user can click on an amazing number of event combinations, any of which could possibly crash the system. You need automated testing to make sure it all works because the development tools that create the GUI generate an immense amount of code, which is difficult to test manually.

GUI building tools can cut down the number of developers you need, but you'll need more testing staffers — perhaps three testers for every 10 developers.



Testing only the GUI. Many organizations that test GUIs make two mistakes: They test only the completed code, and they fail to test the rest of the client/server system. You should test requirements, feasibility and *all* coding. The earlier you discover errors in the design process, the cheaper it is to fix the problems. You need automated regression testing that reuses test scripts that worked with earlier iterations. You also need to test all components of the system, including the following:

- Client workstations' user interface (generally GUI) with various combinations of objects, menus, icons and windows.
- Client interface with the server, including transactions between the client and server.
- Server functionality with efficiency and reliability of concurrent transactions.
- Reliability and performance testing of the network at peak loads.
- Middleware testing to ensure the interfaces work as expected.

Interfaces aren't trivial. In a multivendor client/server project, don't assume components will plug in nicely across architectures, operating systems and protocols. Test to ensure that all parts of a system work together.

Loads of performance. Test server performance under various load levels. Frequently, companies build a client/server system that works well until it succeeds: The number of users grows until the system collapses.

Performance testing tools help you evaluate products to see whether they meet vendor claims. For example, to verify manually whether a piece of software handles 300 transactions per second, you would need 300 staffers hitting the enter key in the same split second. With automated test tools, the system simulates the 300 transactions for you.

Politics aren't always silly. Client/server brings IT professionals onto the end users' turf in new ways because client/server systems are often deeply intertwined with the jobs of workers. This not only increases the visibility of failure but also risks the company's welfare. Testing is the best way to avoid bugs that cause such occurrences.

Managers often skip testing due to aggressive project schedules and tight budgets. The irony is that failure to test adequately is the best way to bring about unbounded delay and runaway costs. ◪

Atre is president of Atre Associates, Inc., a Port Chester, N.Y.-based consultancy that specializes in client/server technologies.

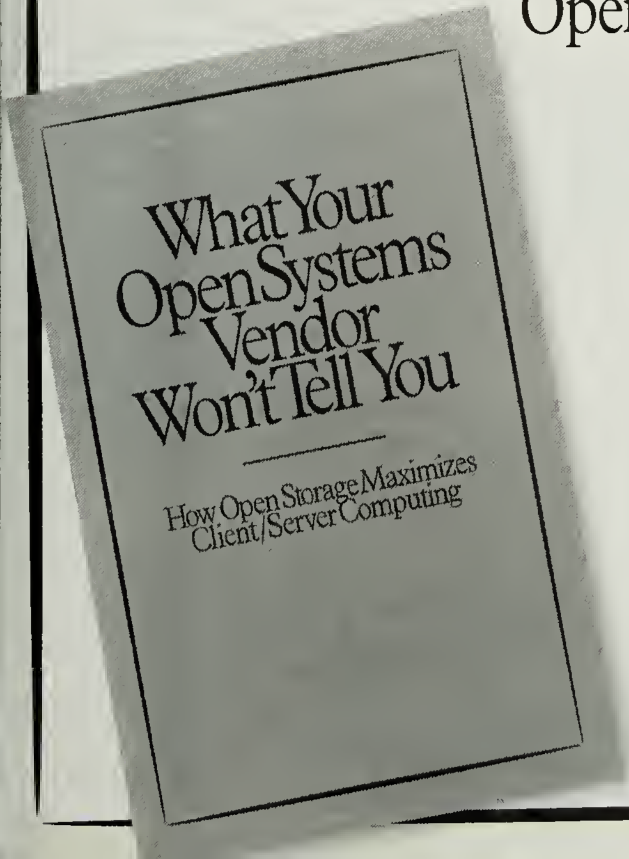
ILLUSTRATION BY ANDY POWELL;
PHOTOGRAPHY BY STEPHEN SHERMAN

Yes, I want to know more about the things Open Systems Vendors won't tell me.

○ Please send me information about how Open Storage maximizes client/server computing.
○ Please have a sales representative contact me.

Name
Title
Company
Address
City
State / Zip
Telephone

11/95 CSJ


What Your Open Systems Vendor Won't Tell You
How Open Storage Maximizes Client/Server Computing

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

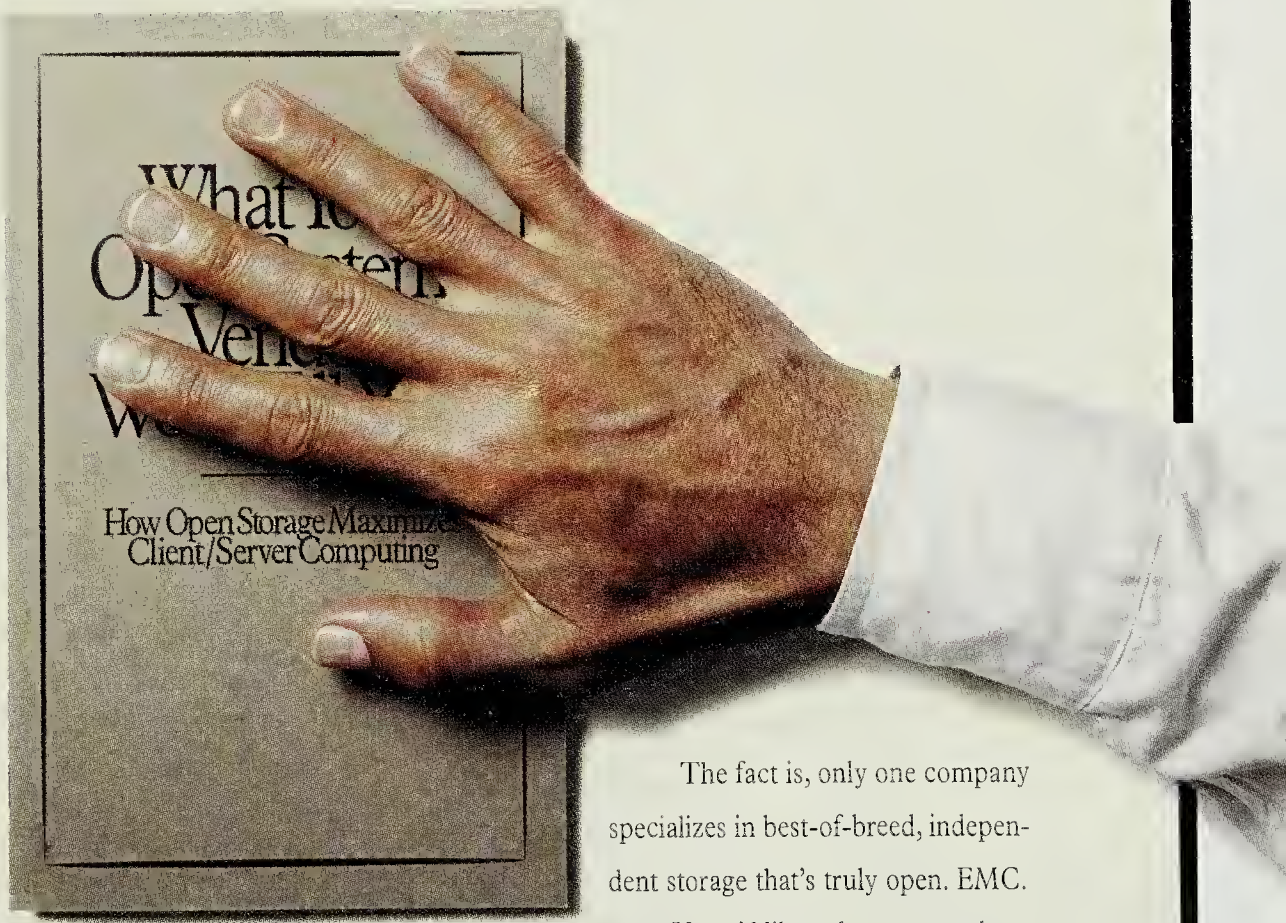
BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 36 HOPKINTON MA

POSTAGE WILL BE PAID BY ADDRESSEE

EMC²
EMC Corporation
35 Parkwood Drive
Hopkinton, MA 01748-9949

In Eight Minutes You Can Learn What Open Systems Vendors Have Been Hiding From You For Years.



You've adopted open systems for the flexibility and independence of best-of-breed solutions. But when you purchase storage with your server, it's not open at all. It can only work with that server. And when your CPU runs out of life, so does your storage.

And that's just the beginning. Did you know performance delays can be solved with better storage? Bet the CPU vendors never told you about that. Or maybe they'll suggest you purchase new storage every time you upgrade the CPU. Another unnecessary cost. And they'll never tell you that with consolidated storage you can manage and store information from all your servers at a single location.

The fact is, only one company specializes in best-of-breed, independent storage that's truly open. EMC.

If you'd like to learn more about using open storage to maximize your client/server investment, call or send for this free book today. Because open system storage has been closed for long enough.

1-800-424-EMC2, ext. 350

OPEN SYSTEMS ARE MAXIMIZED BY A FACTOR OF EMC²

THE STORAGE ARCHITECTS

EMC² and THE STORAGE ARCHITECTS are registered trademarks of EMC Corporation. ©1995 EMC Corporation. All rights reserved.

ADMINISTERING THE R/3 Rx

IMPLEMENTING SAP HAS ITS RISKS — WHERE ARE THE REWARDS?

The business world has gone bonkers over SAP. The attraction: a client/server suite so deeply integrated that it promises to smooth wrinkled business processes and transform corporations into flexible, competitive machines. If you listen to SAP's legion of high-priced representatives (a.k.a., the Big Six), you have to enter information just once, and crucial data moves seamlessly from the back office through the factory to the warehouse and back again. It's enough to make a CEO's heart go pitty-pat.

And SAP AG's sales have spurted with each palpable beat. In only one year, from 1993 to 1994, its worldwide client/server business mushroomed an astounding 235%, reaching $604 million in sales. In comparison, the next nine vendors sold $704 million combined, according to International Data Corp.

And the beat goes on. "The economy is on the upswing, and CEOs want to demonstrate they have some kind of vision by buying SAP," said Woody Chamberlain, vice president of CSC Corp.'s Consulting and Systems Integration Group in Chicago. "And when the economy cools, I think cooler heads will prevail."

Please turn to page 20

BY ROCHELLE GARNER

PHOTOGRAPHY BY MICHAEL BRYANT

STAY IN THE GAME

COMPANY NAME
Elf Atochem North America, Inc., a chemical maker in Philadelphia.

PROJECT SCOPE
17 R/3 modules, implemented across 12 business units, involving 80 people from IS.

TIME IMPLEMENTED
11 months.

DOLLARS SPENT
$4 million.

WORDS TO THE WISE
"People are paying too much. Sure, there have been improvements, but at what price?"

USE OF CONSULTANTS
SAP consultants from IBM's Integrated Systems Solutions Corp. worked side by side with business leaders to document processes and determine how R/3 could achieve envisioned change.

Bob Rubin, vice president of information services

Continued from page 18

William McSpadden, president of Plant-Wide Research Group in North Billerica, Mass., said, "People are buying SAP's R/3 software because other people are buying it."

Time for a dose of lemming-aid. It can't be denied that R/3 is an extremely complete, very competitive system. But if there's one thing this technologic march to the sea has revealed, it's this: Implementing it is the most demanding project companies can expect to face. "SAP is so big, it's stretching the fabric of corporations," said Barry Wilderman, program director of application development strategies at Meta Group, Inc. in Stamford, Conn. Plus, some said, the predefined processes assume one right way to conduct business.

The result is a project even satisfied customers say demands a granite-firm hand at the helm. Abdicate responsibility or accept insufficiently experienced consultants, and costs can rise to heart-stopping heights.

"You're looking at $1,200 a day for just anyone who claims to know SAP," said Bill Zeitz, president of client/server consultancy Zeitz & Associates in New York and former information systems director at American Cyanamid Co.'s Agricultural Group.

Zeitz's previous company has already spent 13 months on SAP's order management module and expects to finally reach production early next year — a few months behind schedule. But that's just for its Specialty Products Group. Deployment in the Crop Protection Group was delayed until June. American Cyanamid said it is premature to comment on the project.

In fact, many R/3 customers aren't comfortable talking yet, although reports of delays and exorbitant costs swirl throughout the industry. Moreover, only 40 of the 400 domestic implementers have taken R/3 into production, according to analysts. SAP claims to have 150 live sites, but analysts say many of those are limited either in size or scope.

CAUGHT IN THE CONUNDRUM

The main reason for deployment derailings is R/3's mind-numbing complexity. Consider: Before the system sees the first light of production, customers must set software switches on more than 4,000 different tables. That's right, 4,000 — a labyrinth of configuration options affecting crucial business processes, such as order taking and crediting accounts.

"With SAP, the opportunity to do things wrong is multiplied by the flexibility of the system," said Bob Rubin, vice president of information services at Elf Atochem North America, Inc. in Philadelphia. "There's just an infinite combination of things that you can configure improperly."

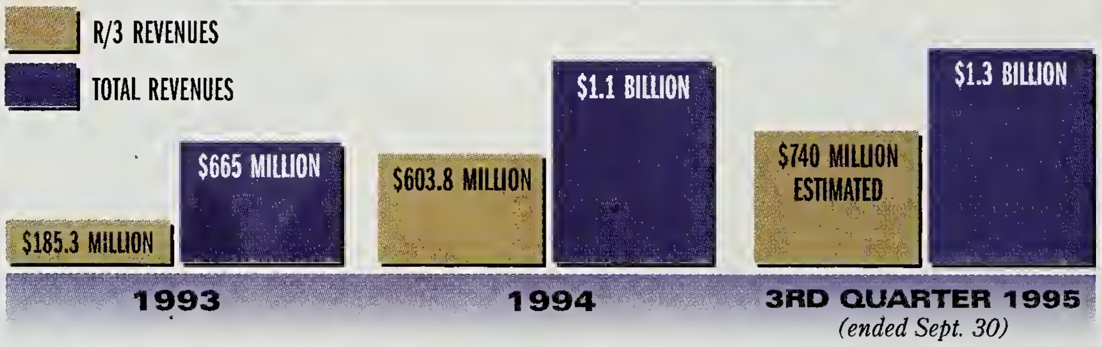
Countered Jeremy Coote, executive vice president at SAP America, Inc. in Wayne, Pa.: "You have to accept that modern business processes are not simple. The biggest problem we face is that when implementing R/3, the clients have to analyze how their companies work now and how they would like them to work."

Still, SAP has been attempting to simplify its products. One step to-

EXPANDING FRANCHISE

SAP R/3 is seeing phenomenal growth: According to International Data Corp. it owns 31% of the packaged client/server applications market . . .

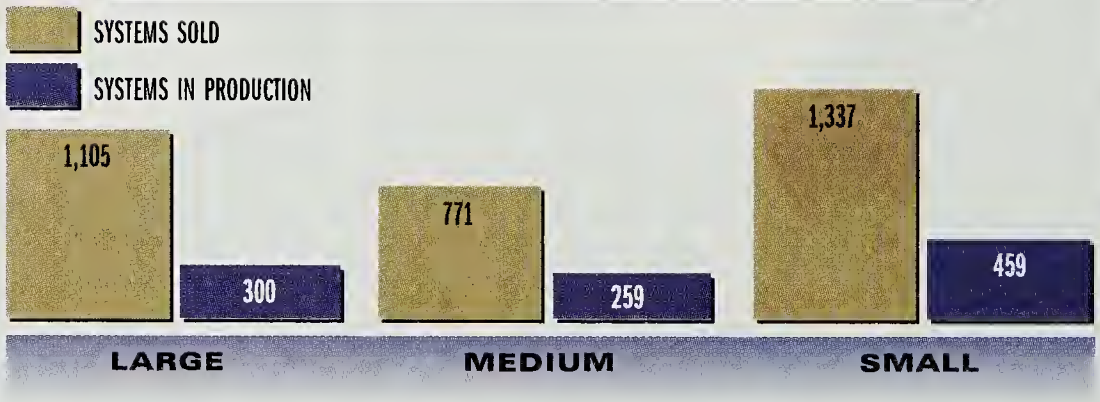
R/3 REVENUES VS. TOTAL REVENUES



Source: SAP

. . . thanks to the many who've purchased R/3. In fact, in the first half of 1995, R/3 customers grew 32% over the same period last year, according to the company. SAP shows one-third of its customers in production mode, although that could mean one module is up and running.

WORLDWIDE R/3 SYSTEMS SOLD VS. IN PRODUCTION



Source: SAP

The complexity of changing the business and reflecting those changes in R/3 is stretching implementation times.

Enterprisewide, multinational projects	3-4 YEARS
Complex projects, involving operational improvement and enabling technology	15-21 MONTHS
Single-site, simple system replacement	3-6 MONTHS

Source: KPMG Peat Marwick

ward that aim: Its upcoming Version 3 will also be packaged for distribution outside of the Big Six and will have most of its options hidden from view. Preconfigured for specific industries, those R/3 implementations could then reveal their hidden options as growing firms need them.

Deploying R/3 as it stands today requires the wisdom of Solomon, the acumen of Forbes and a wealth of third-party assistance. But try finding someone with R/3 expertise, despite the growing gravy train of SAP consultants (see chart page 22).

"This package is so complex that no one knows how to integrate it," said Marina Levinson, business applications director at 3Com Corp. in Santa Clara, Calif.

And Levinson speaks from experience. Now 80% into its estimated 14-month project to deploy global financials, sales and distribution, her team has sent five senior consultants back to 3Com's unnamed systems integrator. "They didn't know how long this would take, how much it would cost and how many people we would need." Levinson advised, "Anyone implementing R/3 should talk to other customers about what to expect because SAP and its integrators won't give you the straight scoop."

And oh, yes, Levinson considers herself a satisfied customer, even though it will be another two years before 3Com completes its entire global project. Why is she so optimistic? "When we're done, we'll have on-line, real-time integration throughout the company," she said.

ONE PIECE AT A TIME

In the meantime, 3Com, which has had to craft interfaces between SAP and its legacy systems, will go live without the benefit of R/3's watertight integration. Nor is it alone: Despite SAP's gunning for the "big bang" implementation, most companies balk at the Gibraltar-size job that entails. Instead, they install R/3 piecemeal: either business unit by business unit or one module at a time. And here lies the core of R/3's catch-22: To reap all the rewards of real-time integration, customers typically must turn off their legacy systems all at once. But few can assume that risk, so implementations drag on and costs mount. "People are paying too much," Elf Atochem's Rubin said. "Sure, there have been improvements, but at what price?"

Chalk up another satisfied customer. Rubin is among the few chief information officers to have implemented 17 different R/3 modules across 12 business units, phased in over a mere 11 months. Total cost: $4 million. The project involved up to 80 people from IS, Elf Atochem's business units and IBM's Integrated Systems Solutions Corp. Even more impressive, Elf Atochem accomplished this feat on time and within budget, while the company underwent a major re-engineering effort.

But wait. Aren't SAP and its Big Six partners constantly announcing projects completed in seven, five — even four — months? True enough. But according to SAP customers as well as observers, those announcements are far more limited in scope. Examine them carefully: Those companies have either mapped R/3 directly to their current processes, implemented only a few applications or automated just one or two business units. That's what makes Rubin's accomplishment so impressive.

His secret is in the management. "There are a lot of things in building a plan for SAP where you can draw on previous large-system experience," Rubin explained. Among the lessons he learned was the proper use of consultants, IS staffers and business leaders.

It's here, in fact, that companies will either hemorrhage greenbacks or keep costs below the SAP average of $5 spent on consulting for every dollar spent on licensing. "You can burn through money if you don't use systems integrators correctly," Levinson said.

At both 3Com and Elf Atochem, senior-level SAP consultants worked side by side with the business leaders who plan their corporate redesigns. The consultants helped business managers document existing processes, triggered ideas for new ways of working and showed whether and how R/3 can achieve those visions.

Meanwhile, Lyondell Petrochemical Co. in Houston feels it is

Please turn to next page

Marina Levinson, applications director

GET THE FACTS

COMPANY NAME

3Com Corp., a Santa Clara, Calif., provider of network technology.

PROJECT STRATEGY

Deploy R/3 financials, sales and distribution modules globally in order to achieve on-line, real-time integration throughout the company.

TIME IMPLEMENTED

Estimated 14 months; two more years for manufacturing.

DOLLARS SPENT

NA

WORDS TO THE WISE

"Anyone implementing R/3 should talk to other customers about what to expect because SAP and its integrators won't give you the straight scoop."

USE OF CONSULTANTS

Consultants worked heavily with business leaders, but 3Com has had to send back five senior consultants to the integrator.

PHOTOGRAPHY BY WILLIAM MERCER MCLEOD

Continued from page 21

saving money by leaning on IS to inform business managers of SAP capabilities. This way, the business leaders remapping the company's processes have time to think about their objectives without worrying about the meter running.

"If you're not careful, you can have your systems integrators chewing up dollars because the re-engineering people can't keep pace," said Randy Lewis, director of information services.

HELP ON THE WAY

Trying to find experienced R/3 consultants is vexing, despite a boom in that business . . .

1994 VS. 1996 (PROJECTED)	1994	1996
Andersen Consulting	1,750	3,500
Coopers & Lybrand	700	1,000
Deloitte & Touche	800	3,500
Ernst & Young	800	1,000
KPMG Peat Marwick	500	1,000
Price Waterhouse	425	1,000

Source: International Data Corp., Framingham, Mass.

*. . . and R/3 consulting fees, industrywide, are way above the industry norm. **

Consulting cost for R/3	$5 FOR EVERY $1 OF LICENSING
Consulting cost for average application	$2 FOR EVERY $1 OF LICENSING

**Estimated average costs*

Which doesn't mean Lyondell isn't using consultants. It's just that Lewis sees the greatest value in that most rare and precious jewel: the expert who understands how all of SAP's modules interact to form a more perfect business. What's more, Lewis said, he's managed to lower the consultant/software ratio to just $3 to $1, just by knowing who to call in, when. "It became clear early on that we didn't always need the highest-level consultants on staff," he said.

Those are two ways to manage the project. Varian Associates, Inc., headquartered in Palo Alto, Calif., has taken a different tack. There, Dinesh Mangalick, manager of the SAP project, has kept out high-level consultants altogether. "From the beginning, we said Varian's IS and business team will run the project," Mangalick said. "We decided how the business runs and how the processes are set up. And we only used a small consulting firm knowledgeable in R/3 to help us learn the product."

While Varian's approach runs contrary to common wisdom, it does have its advantages. For starters, two business units have already gone live — one in seven months and the other in nine, with the latter unit running manufacturing, sales and distribution, finance and human resources. And although Mangalick wouldn't reveal how much Varian's project costs, he did say that by the time Varian rolls out the remaining nine U.S. business units, consulting costs should be even with software costs.

"Our objective was to align the system to our market needs but to do it in a way that lets us first understand the system and then improve it with continuous re-engineering," Mangalick said.

Which approach works best? Each has its proponents. But all agree that because of R/3's extraordinary complexity, managing manpower is the only way to control costs.

PAIN WORTH THE GAIN?

But an even more compelling question concerning SAP's client/server powerhouse is this: Is it worth it?

"The only sensible strategy when putting in client/server is to place a high value on flexibility," CSC's Chamberlain said. "But because SAP is so difficult to put in, people are loath to go back and modify it. And [that] makes me question SAP's value proposition."

SAP's position: Give it time. "Most companies have not seen the live R/3 system played back in terms of true business benefits over time," Coote said.

But some customers are tired of waiting. "If I had to do it again, I would think twice about going with SAP," Zeitz said. Unlike three years ago when R/3 arrived, alternatives today are almost as functional and more flexible.

Others disagree, finding R/3's value in the best business practices it helps define. "I believed our business processes were more inadequate than our systems, and SAP was exactly what we were looking for," Lyondell's Lewis said.

Before succumbing to peer pressure, examine closely what your company wants to be when it grows up. Because it's only by knowing where you want to go that you can decide whether R/3 is the proper vehicle.

"Someone once asked me, 'Is SAP the right answer for our business?'" Elf Atochem's Rubin said. "And I responded, 'What's the question?'" ◩

Garner is a freelance writer based in San Carlos, Calif.

BUILD APPLICATIONS THAT CAN *Change* AND SCALE WITH YOUR BUSINESS.

Build, Deploy, Adapt, Scale, Reuse

With Galaxy, you build, deploy, adapt, scale, and then reuse your investment across projects. Your team leverages Galaxy's world-class object frameworks to rapidly create scalable internationalized applications in C or C++ that run across all major platforms. And when you hit that unexpected business or technology curve in the road, you won't "hit the wall" with Galaxy. Evolve your applications to a client/server or multi-tier distributed architecture—when and if your business demands.

Maximize Productivity Across the Lifecycle

Galaxy offers the highest level of productivity available across the application lifecycle. Galaxy's object libraries and innovative structural foundations are integrated with the industry's most advanced distributed services and GUI builder to maximize your productivity, and your flexibility. With Galaxy, your entire application is completely portable—no code changes and no compromises.

Succeed in the Real World

Hundreds of leading corporations have used Galaxy and our expert consulting services to break the vicious application cycle and deliver strategic applications on time and under budget. So can you.

Call 800.832.8668 today for more information. Ask for the White Paper: **Building Applications that Support Rapid Business Change**, from Hurwitz Consulting, and a schedule of Galaxy seminars.

BUILD ▸ DEPLOY ▸ ADAPT ▸ SCALE ▸ REUSE ▸ SUCCEED

Software Development Jolt Product Excellence Award 1993

UNIX Review Outstanding Product 93

GALAXY
Application Environment®

Visix Software Inc. 11440 Commerce Park Drive Reston, VA 22091 800.832.8668/Toll Free 703.758.8230/Telephone 703.758.0233/Facsimile galaxy@visix.com/Email

VISIX

WHEELING AND DEALING WITH DERIVATIVES

WALL STREET FINDS ITSELF EMBRACING OBJECTS AND EVERMORE POWERFUL DISTRIBUTED ARCHITECTURES TO KEEP COMPETITIVE PACE

ORANGE COUNTY, CALIF. THE MEAD CORP. BARINGS PLC. THEY READ LIKE A WHO'S WHO OF ORGANIZATIONS SNAKE-BITTEN BY DERIVATIVES DISASTERS.

While there were different reasons behind the collapse of each portfolio, some general themes emerge. Ineffective investment management on the part of Orange County played a role in its estimated $1.7 billion loss. At Barings, executive oversight of a 28-year-old trader and inadequate risk management systems led to the failure of the venerable British bank. Mead suffered major losses after rising interest rates and falling prices on fixed income rates unglued its derivatives portfolio, which was managed by Bankers Trust Co.

But even for the billions of dollars these institutions have lost, they remain exceptions in an industry where the underlying assets of U.S. bank-held derivatives have swelled to more than $18 trillion this year, according to Federal Deposit Insurance Corp.

Derivatives are contracts based on or derived from other assets, such as bonds, stocks, foreign currencies or interest rates. Prices for derivatives vary with the underlying assets applied to them. For example, a sample derivative may be based, in part, on petroleum futures. To build derivatives products, traders use workstations with complex analytical software to access and crunch current market data and historical information as they try to predict whether industrialized nations will increase their long-term oil demands or figure out whether OPEC will hike oil prices (see illustration at right).

Because even the simplest derivatives can be fairly complex, trading firms require elaborate information systems to build and track them. As a result, Wall Street's demand for faster, more sophisticated client/server systems is stronger than ever.

As the derivatives market barrels ahead, Wall Street technologists are being challenged to keep pace. Until recently, brokerages took a fairly straightforward approach

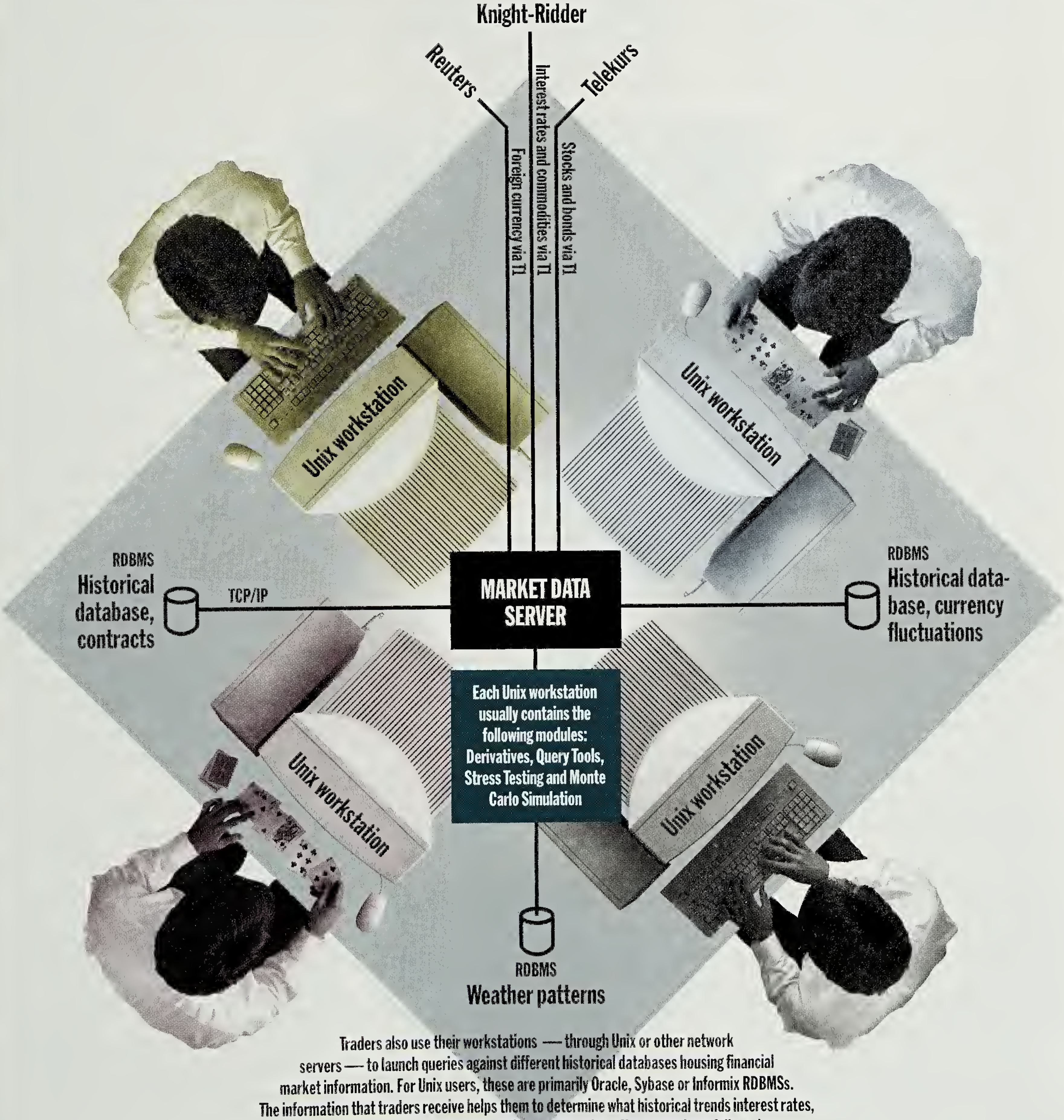
Please turn to page 26

BY THOMAS HOFFMAN

ILLUSTRATIONS BY JOHN BAXTER/ACME DESIGN CO.

PLAYING FROM A STRENGTHENED HAND

Derivatives traders use their workstations to obtain digital market data feeds from on-line services such as Reuters, Telekurs and Knight-Ridder over T1 lines. Digital market data is usually networked to traders' desks through the company's Ethernet, TCP/IP or other networks.


Knight-Ridder
Reuters
Telekurs
Foreign currency via T1
Interest rates and commodities via T1
Stocks and bonds via T1
Unix workstation
Unix workstation
Unix workstation
Unix workstation
RDBMS
Historical database, contracts
TCP/IP
MARKET DATA SERVER
RDBMS
Historical database, currency fluctuations
Each Unix workstation usually contains the following modules: Derivatives, Query Tools, Stress Testing and Monte Carlo Simulation
RDBMS
Weather patterns

Traders also use their workstations — through Unix or other network servers — to launch queries against different historical databases housing financial market information. For Unix users, these are primarily Oracle, Sybase or Informix RDBMSs. The information that traders receive helps them to determine what historical trends interest rates, currency fluctuations and even weather patterns that affect crops have followed. These results are then applied to the creation of derivatives products.

Continued from page 24

to building and managing derivatives products, relying primarily on either mainframe or Unix-based trading systems and homegrown Monte Carlo simulation analytic models.

But after becoming reasonably comfortable developing and managing Unix, which has enjoyed a 10-year bull run on Wall Street, techno-trader firms are now struggling to clear new hurdles. They include the steep learning curve required of object-oriented development environments such as Next Computer, Inc.'s NextStep and building industrial-strength, distributed computing infrastructures to accommodate complex derivatives modeling and processing.

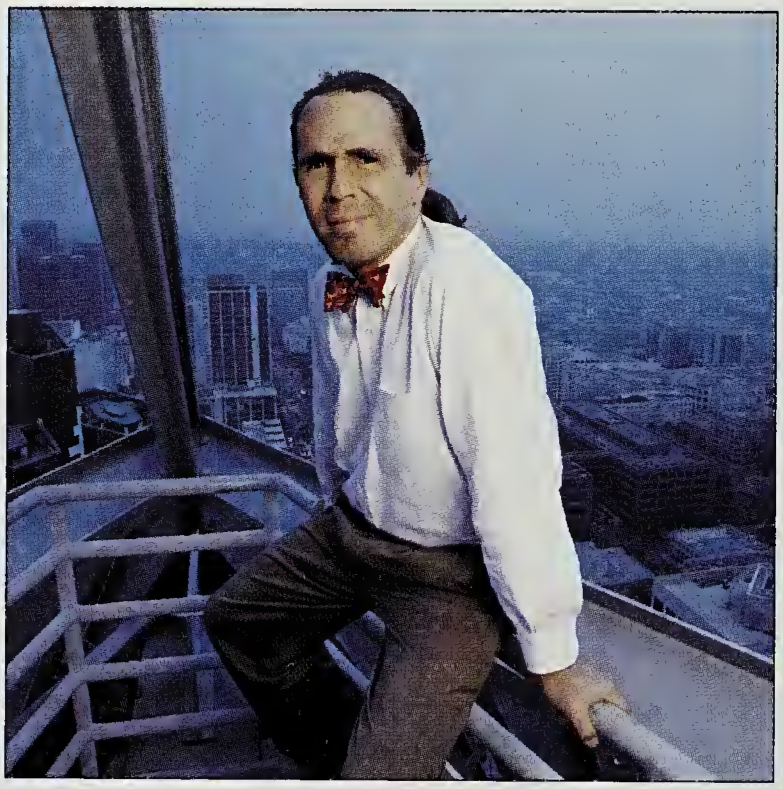
Derivatives groups are tapping NextStep and other object-oriented programming environments to enable multiplatform financial applications to communicate more effectively with one another.

On top of that, Microsoft Corp.'s Windows NT is starting to proliferate on "The Street," forcing capital markets systems executives to scramble for ways to manage an ever-growing potpourri of disparate systems.

For example, derivatives managers at Nicholas Applegate Capital Management, a San Diego-based portfolio manager, use a handful of Sun Microsystems, Inc. workstations but prefer 100-MHz, Intel Corp. Pentium-based, symmetrical multiprocessing workstations to run the firm's 30-plus NextStep portfolio management applications under Mach Unix, according to Duncan Wilcox, vice president of IS.

Wilcox and the 17 developers who have joined him at Nicholas Applegate during the past three years are building the firm's IS infrastructure from the ground up using NextStep. The NextStep systems replace Windows-based desktops and Novell, Inc. servers. So far, the $6 million investment in hardware and software — including routers, hubs and 400 workstations — to assemble the firm's front- and back-office architectures appears to have paid big dividends.

When Wilcox joined Nicholas Applegate in 1992, the firm had 80 staffers and $4 billion under management. Today, it manages more than $26 billion in assets with 260 employees. While surging derivatives and increases in other investment vehicles led to this growth, Wilcox is convinced that the company's savvy use of technology played a key role.



Nicholas Applegate's Duncan Wilcox is bullish on NextStep

"Once you reach a certain point in a company, you can't piece together an architecture using third-party, off-the-shelf tools," he said. Building in-house applications "is where you're going to gain competitive edge, especially when you're competing with 17,000 other investment advisers on a daily basis."

The use of object-oriented development tools has helped Nicholas Applegate stay ahead of its competitors, Wilcox said, because they enable the firm to integrate its disparate activities through a modular, building-block approach. "Spending a lot of money on in-house development doesn't really mean anything unless you provide better investment performance to your clients," he said. "Just because [Ford Motor Co.] sold a lot of Pintos doesn't mean it was a good car," he added.

Wilcox isn't the only IS czar who's bullish on NextStep. First Chicago Corp. began using NextStep five years ago for front-office systems development and has recently extended its use to create back-office applications, according to Martin Bronstein, a senior vice president who oversees the global capital markets systems team at the bank. Still, First Chicago was challenged by NextStep's "tremendously steep learning curve," as Bronstein called it.

"We had a scarce talent base to work from and a lot of start-up projects going on because we didn't have much of an infrastructure in place" to support derivatives trading in 1990, Bronstein said. Although it "took a while for the [NextStep] start-up expenses to get going, if you look at what we've done vs. others using C++, we've done very well," he added.

Bronstein estimated that by using NextStep, First Chicago was able to build its foreign exchange options and derivatives front-office systems in 75% of the time it would have taken using a comparable development tool such as C.

Nevertheless, systems management remains a challenge for the $75.3 billion (in assets) bank. Because Unix network and systems management tools are still maturing, "people are the solution we've had to use," Bronstein said. He estimated that using more bodies to manage its growing client/server cache has ended up costing First Chicago 25% to 40% more than if effective systems management software were available.

In some respects, given the right mix of tools, client/server computing in both front- and back-office environments can actually be less complicated than the old centralized approach.

PHOTOGRAPHY BY ALAN LEVENSON

"Screen paint times with X Windows technology is much faster when you're using a workstation in Tokyo to access a local server. It's much more efficient than connecting to a worldwide network to reach a machine in New York or London," said Bruce Connor, vice president of Chemical Banking Corp.'s capital markets derivatives unit.

STOCK IN UNIX

Client/server systems can offer greater throughput than mainframe terminal emulation systems, Connor said. "Code execution times can be greatly increased through client/server, and that's extremely important for options evaluations systems," he added.

Besides, traders can massage market data much more effectively with intelligent Unix and Windows NT workstations equipped with 32-bit multitasking functionality than they ever could with dumb terminals. "We are now in a position with our foreign exchange and [repurchase agreements] businesses where we can look across products, currencies and entities on a more real-time basis than we ever could in the mainframe environment," said John Galante, first vice president and director of debt markets systems at Merrill Lynch & Co. in New York, whose 150 derivatives traders and salespeople are using a mix of Sun and Windows NT workstations.

While legacy mainframe systems provided Merrill Lynch with the processing power it needed to build and manage its financial instruments, centralized computing "didn't provide the kind of flexibility that's required to provide real-time decision-support capabilities to support multiple products and currencies," Galante said.

That kind of flexibility, he added, is a necessity in the fast-moving derivatives business, where the bottom line is, well, the bottom line. ◩

Hoffman is a Computerworld *senior editor.*

RISKY BUSINESS

Exotic financial instruments such as derivatives require more sophisticated risk management systems and governance than plain-vanilla investment vehicles. Even though shaken investors have forced most investment houses to shift their funds to less volatile derivatives, where the risk of huge losses is considerably reduced, most trading firms still don't have comprehensive risk management strategies or systems in place to measure their potential losses.

"Organizations need to take a more holistic, firmwide view across products and trading desks," said Peter G. Kane, vice president of information technology at Lloyds Bank PLC in New York.

Many investment firms that historically have had disparate trading systems to support separate products are challenged to bring them all together under a single risk management hood. Chemical Bank, for example, runs its standard options trading in a PC environment. However, the bank is porting these applications to an IBM RS/6000 AIX environment, which is also used to support its exotic options trading.

"We are consolidating our risk management onto one platform. It's too difficult to manage the trades when the market moves rapidly," said Bruce Connor, vice president of the capital markets derivatives unit at the New York-based bank.

To date, Chemical, like other banks, has had trouble finding a single, comprehensive risk management system that crosses multiple platforms and fulfills all of its needs, Connor said.

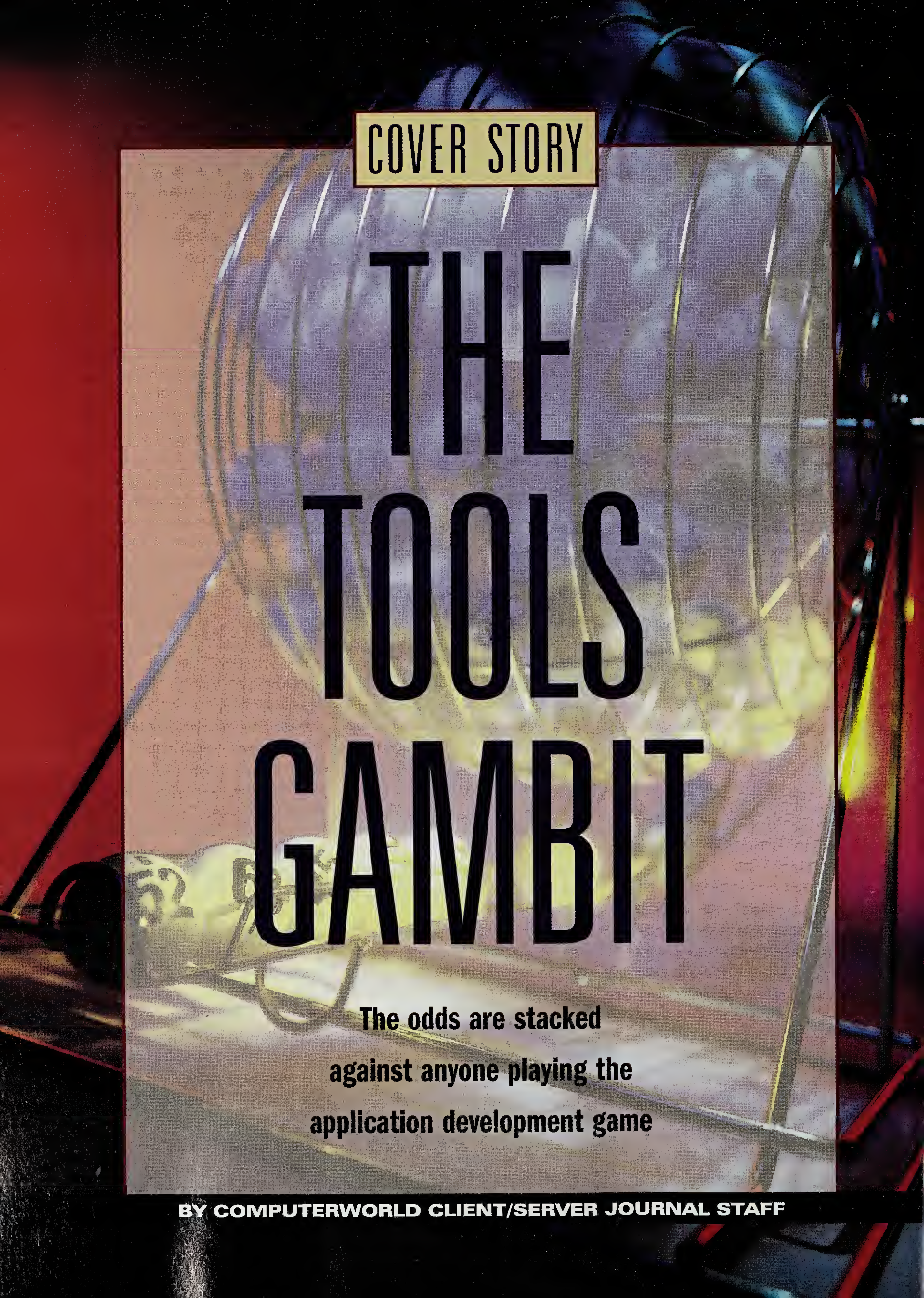
Global and even regional risk management doctrines are stymied more by politics than by inadequate middleware technology. Most sell-side brokerages are split into "fiefdoms," where one trading desk competes against another for the biggest chunk of the bonus pool, according to Joseph Rosen, managing director at Enterprise Technology Corp., a New York-based financial technology consultancy. "Most of these trading desks are loath to share their information with anyone in the firm," Rosen said.

"Teamwork sounds good, but if you have a bonus pool where the incentive is to be at each other's throats, risk management is not going to work," he added.

Sophisticated third-party risk management systems can integrate data from the front office to the back office and perform high-level risk analysis. For example, leading products such as The Radar System from Berkeley, Calif.-based Risk Management Technologies were designed to predict market outcomes by utilizing workstation power, relational databases and user-friendly graphics. Even J. P. Morgan & Co., a New York-based investment bank and derivatives dealer, markets its own risk management methodology, called RiskMetrics.

Others insist that in-house development is best for risk management because every organization's operations are unique.

"It's hard to find a third-party package you can just plug all of your numbers into," said Jim Rogers, senior vice president of derivatives and foreign exchange at First Union Corp. in Charlotte, N.C., which developed its own risk management software using Infinity Financial Technology's C++-based Fin++ Class Library.



COVER STORY

THE TOOLS GAMBIT

The odds are stacked against anyone playing the application development game

BY COMPUTERWORLD CLIENT/SERVER JOURNAL STAFF

Repeat after me: Open, client/server, cross-platform, highly scalable, enterprisewide, rapid application development tool. Say it again. And again.

Sound familiar? You've heard it before. Almost every one of the hundreds of client/server application development tool vendors is singing from the same score. What varies is their intonation and inflection: There are third-generation languages, fourth-generation language (4GL)/graphical user interface (GUI) builders, repository or model-driven approaches and object-oriented methods.

Aside from a few household names, the vast majority, while hardly fly-by-nighters, are swimming in obscurity, with user bases in the hundreds or thousands. And it's a topsy-turvy market: Model-driven suppliers are offering object-oriented features such as encapsulation; 4GL players are grafting componentization techniques into their development suites.

Which raises the question: How many companies can survive by voicing variations on a theme? And which do organizations want to listen to for the long haul? The answers depend as much on the state of your client/server expertise as on your technological convictions.

In the short term, a good many vendors will not only survive but prosper. "It's anarchy: Everyone is buying everything," said Tsvi Gal, vice president of client/server computing at BankAmerica Corp. in San Francisco.

In fact, many vendors that are $20 million to $40 million in size are still growing 30% to 40% per year, noted Wayne Kernochan, director at the Aberdeen Group in Boston. And the center of gravity is down in the single-digit-millions range, said Steve Hendrick, an analyst at International Data Corp. (IDC).

According to Hendrick, rapid technology change will ensure continued room for small innovators, such as testing tool suppliers. Even as increased complexity makes market entry more difficult for the average shop, "the emphasis on [components, middleware and infrastructure products] may make it easier to be a small independent," he said.

But the picture changes, some say, a year or two down the road. "Things will shake out," Gal said. In some people's minds, the shakeout has already begun. The following are exhibits one through four:

- Sybase, Inc.'s $940 million acquisition of Powersoft Corp.
- Compuware Corp.'s $300 million purchase of Uniface Corp.
- Gupta Corp.'s $7 million licensing deal with and $10 million loan from Computer Associates International, Inc.
- Roughly $27 million and $28 million, respectively, in financing for high-end tool makers Dynasty Technologies, Inc. and Forte Software, Inc., though both only recently began shipping the second releases of their products.

"Some very good companies are going to go away," said Curt Monash, who has tracked the software business for the past two decades and now presides over a

Please turn to next page

INSIDE

- Will users wait until mid-'96 for a PowerBuilder enterprise version? **Page 30**
- Strong user groups spell Picom success. **Page 34**
- Forte's three tiers lead Corning's way. **Page 35**

PHOTOGRAPHY BY JOHN WILKES

Continued from page 29

New York-based consultancy that bears his name.

Or they get sucked up by enterprise or "wanna-be enterprise players," commented John Rymer, an analyst at the Patricia Seybold Group in Boston. Software vendors that want to provide data management, operating environment, distributed computing services, network systems management and development tools "have to put all the pieces together to do that," Rymer said. All of this raises questions for anyone trying to establish a list of standardized, IS-supported tools.

Why a shakeout? A big reason is user tastes and needs. While there will always be diverse developers, applications in general are moving upstream to become truly enterprise-wide. As such, clear technological, business and market attributes are emerging that will help distinguish the leaders from the also-rans.

One thing is clear: Of paramount value will be tools that enable developers to build distributed applications using reusable components in which business logic — in procedural or object form — can be partitioned across servers spanning the network.

For Rymer, the break in the market is caused by three-tier client/server. Because once organizations start thinking of three tiers, he said, their imaginations run wild. "That rigid kind of thinking about application design breaks down real fast, and you start thinking about n-tiers," he said.

This potential market break will result in hard times for some but may catapult little-known, object-oriented middleware and tools players such as TSCI Corp. in Berkeley, Calif., with its Object Services Package, he said. The big question, of course, is their ability to marshal their resources to take advantage of this opportunity.

Companies that may bridge the way to n-tier include so-called second-generation client/server players, such as Dynasty, Forte and Texas Instruments, Inc. with its IEF Commander.

But while these three-tier enabling tools are the darlings of many market watchers, each exhibits at least one of two fatal flaws: priciness and small user bases. "The dollar

BEAT THE CLOCK

Powersoft has given itself until mid-1996 to come out with a true enterprise version. Will corporate America wait?

In the world of client/server development, it is difficult to ignore Powersoft. Its PowerBuilder development environment vaulted to prominence in a market increasingly diluted by a sea of seemingly similar offerings.

The question is, who will get to the next level of capability first: corporate America or Powersoft? Powersoft has given itself until mid-1996 to support multiple platforms, three-tier architectures and enterprise-size scalability.

That's theoretically enough time. "A lot of people are still talking and thinking" about three-tier types of development tools, said David Kelly, senior consultant at Hurwitz Consulting Group in Newton, Mass. "The widespread market has not yet adopted that."

On the other hand, a number of companies are already there. Companies such as InSync (with Passport), Four Seasons (Super Nova), Borland (Delphi) and Symantec Corp. (Enterprise Developer) don't have a lot of market share, but they do have "a lot of nice technology," Kelly said.

PowerBuilder's prime competitors are also gaining technical ground. Using OLE automation, Microsoft's Visual Basic Release 4.0 enables application logic to be partitioned across different Windows systems.

On the user side, leading-edge PowerBuilder developers are already hitting some inherent limits. "It's an interpreted product and tends to run fairly slow," said Joe Pearson, president of JDP Computing Services, a software developer in Boise, Idaho. And as applications grow larger, PowerBuilder-based applications begin to show their weaknesses because the majority of the application logic resides on the client.

Powersoft "thinks they can [scale applications], but in a lot of instances, for a lot of applications, it tends to have trouble," Pearson added.

Some companies have designed three-tier applications around PowerBuilder, but they've had to resort to C-level languages to create the middle tier. This makes for a cumbersome application that is more difficult to move or maintain.

And while analysts see mid-1996 as doable, there are lots of technology and business challenges along the way.

For starters, there's the cross-platform issue. Powersoft has announced a beta Unix version and is struggling with an Apple Computer, Inc. Macintosh version. Originally promised for November 1994, the initial Unix ports were to the Sun Microsystems,

amount per developer and runtime fees are very high" for Forte and Dynasty, said Bill Childers, client/server architect at the Florida Department of Revenue in Tallahassee, Fla. Plus, he said, any of these relatively new players tend to neglect a particular area, such as the number of widget properties or nice graphical user interfaces.

In all, Seybold's Rymer said, their youth leaves a lot to prove.

Some observers said they believe the database vendors will dominate because their products are client/server's centrifugal force. "Take Oracle," Monash said. "The database gives them strong deployment features, such as knowing how to structure new data types and the intricacies of the concurrency model."

Tools that provide business and data modeling functions and well-architected data repositories or encyclopedias — or seamless links to third-party products that offer these — will also age gracefully. Sound like I-CASE? It should. Distributed applications built by small, dispersed development teams require the discipline and rigor that structured engineering-influenced programming can provide.

"Tools don't do architecture and design. It's something people forget," said Al Nickles, president of Client/Server Technologies, Inc. in Atlanta.

Computer-aided software engineering (CASE)-based vendors, however, have to fight a history that their competitors have been spared. "The CASE stuff created a lot of negative impressions in the market," said Sandy Taylor, an analyst at The Standish Group International, Inc. in Dennis, Mass.

So where does this leave basic, stand-alone 4GL/GUI builders such as Microsoft Corp.'s Visual Basic, Powersoft's PowerBuilder and Gupta's SQL Windows? They remain great for rapid prototyping and for building tactical applications that span workgroups and small departments. And tight linkage to Windows front ends will guarantee their mainstream use for the near term.

They may actually become more important as companies trust the desktop for significant applications, said Daniel Kusnetzky, research

Please turn to next page

Inc., IBM and Hewlett-Packard Co. platforms. Today, the company says only the Sun Solaris port will become available this month. There is no date for the Macintosh or other Unix ports, according to a company spokesperson.

So although Powersoft currently supports Microsoft's Windows NT, "they need to be able to put application logic on Unix servers," Kelly said.

The problem is, PowerBuilder was originally designed and written tightly to the Windows API, so the cross-platform port has been very difficult, he said. It requires the design of an interpreter, which translates the Windows API calls into their Open Software Foundation Motif equivalents. A similar translator will perform the same functions on the Macintosh. While this provides interoperability, it does little for performance because of the interpreter's added layer.

Secondly, there's the three-tier capability. Slated for Version 5.0, it may debut in mid-1996, analysts said. Powersoft would say only that the product is in alpha testing. "We are very early in the cycle," a company spokesperson said.

The three-tier capability will likely be added by enabling PowerBuilder clients to call PowerBuilder objects on a server, which would require the addition of a communications mechanism similar to remote procedure calls (RPC), Kelly said. "There is certainly the potential for them to do that," he said.

"If [Powersoft] comes out with a marginal [enterprise-class] offering, I think that's going to hamper widescale acceptance."

DAVID KELLY
SENIOR CONSULTANT
HURWITZ CONSULTING GROUP

Today, Powersoft employs a fat client architecture in which procedures, validation and rules are kept on the client side. Isolating processes by creating RPCs would allow for greater application partitioning and flexibility. After all, today's middleware products (except for high-end transaction processing monitors) are straightforward communications mechanisms. But it all comes down to a question of how well Powersoft developers implement the new version, Kelly said.

Another thing Powersoft needs to add is a stronger repository, beyond object indexing and browsing functionality. "They need a repository that's large enough and well-planned enough" to support enterprisewide applications, said Wayne Kernochan, an analyst at the Aberdeen Group in Boston, Mass.

Then there are the business issues.

With the Sybase acquisition last year, some wonder how open Powersoft will remain. Others are more concerned about whether the Sybase half of the family will hold its own. "The basic problem is that Sybase has no high-end development tool set to match the high-end applications" for which the Sybase engine is frequently employed, Kernochan said. "Sybase couldn't put it together," he said, "and Powersoft is not going to come in with it before next year."

In the end, Powersoft's delay with an enterprise-class product leaves the door open for the competition. If it comes out with a robust offering that doesn't have a lot of problems and bugs and performs well, Powersoft could continue its leading role, Kelly said. But "if they come out with a marginal offering, I think that's going to hamper widescale acceptance," he said.

Continued from page 31

manager at IDC. But they'll need to up their game. Ease of use, with zero dependence on a database administrator, will be paramount, as will the ability to interact with higher-end tools used elsewhere in the corporation. "Companies that can make predefined objects available will have the advantage," he added.

But while Visual Basic (along with C) will be the dominant scripting language, Monash said, "no one in their right mind will use these languages except as connective tissue. Most [mission-critical] applications will be built with higher-level tools."

"The real question is going to be whether Microsoft and Powersoft, in particular, will be able to address three-tier and then, by extension, highly distributed applications," Seybold's Rymer said.

So far, he noted, Powersoft has taken only baby steps (see story page 30).

A company such as Gupta seems particularly vulnerable, given continuing — though narrowing — losses and despite the fact that pundits wax enthusiastic about SQL Windows' technological capabilities.

If Gupta is worried, newly appointed Chief Executive Officer Sam Inman isn't showing it. The CA loan has kept the company solvent while it shaves overhead and revamps its product strategy and message. And Gupta's 120,000 licenses suggest the product could well outlive its progenitor.

But having good technology and bad financials can eliminate a vendor from consideration. BankAmerica's Gal cited Borland International, Inc.'s Delphi as an example. "Two or three years ago, [financials] would not have been a concern because if Borland were to go under, someone would have picked up the technology," Gal said. "[But] today, with so much good technology, that's not necessarily true. Some tools may not survive the cut."

Those products that haven't already risen above the noise level are likely doomed to continued obscurity and eventual failure, according to Richard Finkelstein, president of Performance Computing, Inc. in Chicago. He said he believes sustainability correlates (in part) to installed base: Top-tier products are those that have shipped 100,000 or more; second-tier products top out at a few thousand units. Finkelstein said he sees the many remaining companies as "niching themselves out" or simply becoming dead-end products.

Though some information systems managers tend to base their tools purchases on market leadership, David Kelly, senior consultant at Hurwitz Consulting Group, Inc. in Newton, Mass., thinks this could be a mistake. "You really need to look more closely at the underlying technology and how that works or doesn't work for your business," he said.

RISKY BUSINESS

But if Finkelstein is correct, most leading-edge tools, with their midsize to small user bases, will involve some level of risk. The best you can do, it seems, is manage that risk.

"We're trying to find a combination best-of-breed in each area as well as [whether companies will] be there for us" in the long term, Gal said. "It's not an easy thing to do; it requires a lot of guesswork."

Florida Department of Revenue's Childers is a case in point. He has placed his large-scale client/server bet on little-known JAM 7, a three-tier, multiplatform environment from New York-based JYACC, Inc.

Despite his faith in JAM's technology, Childers conceded the possibility that continued obscurity could force the company to throw in the towel. But is this a big source of concern? "Not really," he said. "The way we've done our architecture, I can replace things on a piecemeal basis."

This, analysts said, is vital. "The key is not so much the who; it's the how," Monash advised. "Design objects or components that put an em-

Please turn to page 34

THE WINNER'S CIRCLE

Here are some technological considerations and questions to ask before choosing a next-generation application development tool, courtesy of Al Nickles, president of Client/Server Technologies, Inc. in Atlanta.

- **Examine the tool's programmatic components: the GUI and the API; the GUI programming logic; business logic unique to the application; business rules that may need to sit on the server; data access language; communications; database engine; and middleware.**
- **Assess its cross-platform and database support, including its support for object and database access standards.**
- **Explore workgroup development features, such as a repository, data dictionary and the ability to assign and enforce roles for specific developers.**
- **Define satisfactory runtime performance, and ensure that the tool is capable of matching it.**
- **Determine whether the tool integrates external code, such as Dynamic Link Libraries and C subroutines.**
- **Check its ability to build applications that offer concurrent access to distributed and local databases.**
- **Consider whether the tool is part of a family that addresses multiple skill levels, from entry-level to advanced.**
- **Check for an optional C language source code generator. This would allow you to extend programs by integrating components written with other tools.**
- **Look for automatic partitioning that takes best advantage of the distributed architecture at hand.**

SAVE $8.05

COMPUTERWORLD

Professional Courtesy Discount

51 issues for $~~48~~. *Now only $39.95**

Please complete the information below to qualify for this special offer.

YES, I accept your offer of $39.95* for 51 weekly issues. That's a savings of over $8 off the basic subscription rate. Plus, I'll also receive bonus issues of Computerworld Client/Server Journal at no extra charge.

Address is: ☐ Home ☐ Business Basic rate: $48 per year

* U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Name

Title

Company

Address

City State Zip

E4CS5-X

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/ Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other__________ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys, Data/Tele. Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Svs.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/ Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products Yes No
Networking Products Yes No

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55B MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
PO BOX 2044
MARION OHIO 43306-2144

APPLICATION DEVELOPMENT

Conference & Exposition

DRIVING BUSINESS PROFITABILITY WITH ADVANCED TECHNOLOGY

USER ▪ TECHNOLOGY CONFERENCE

Middleware & Execution Architectures
Distributed Systems Development
Object & Component Based Development

ALSO: TWO-DAY YEAR 2000 CONFERENCE

March 6-8, 1996 - New York Hilton
New York City

To Register or Exhibit:
Phone: 508/366-3344 x044   Fax: 508/366-8010   E-mail: 76102.1473@compuserve.com

Sponsored by:

Software Productivity Group
Publishing ▪ Conferences ▪ Market Intelligence

Application Development Trends

COMPUTERWORLD CLIENT/SERVER JOURNAL

CASE STUDY: SAFETY IN NUMBERS

Strong User Group Spells Picom Success

Picom is one organization that eschewed arcane architectural or methodological evaluations. The professional liability company in Lansing, Mich., selected its tool largely on the vendor's reputation, user base and support structure.

Picom chose Cognos Corp.'s Powerhouse, a 4GL development environment, in 1992. Using Powerhouse, the company is building mission-critical applications for its Hewlett-Packard Co. Image database engine, running on an MPE-based HP 939 server.

Applications include a customer service program for facilitating telephone inquiries about file status and other common queries, as well as a general-information retrieval database.

For advice on architectural and technological compatibility, Picom leaned on HP. With those recommendations in hand, the company asked the vendors how well the tool's applications would function in a StarLAN Token Ring network as opposed to an Ethernet architecture. That alone helped develop a short list of possibilities, said Vicki Dulebohn, systems manager at Picom.

STELLAR SUPPORT

Support quality was the final arbiter, as Picom's four developers were newcomers to client/server development. Dulebohn surveyed the Powerhouse customer base to assess both its activity level and satisfaction with Cognos' products. "Cognos has a very strong user group," she said. "We would not have been able to complete our projects to the success level that we did if it were not for the availability of the user group."

Most important, she said, was the time during each meeting when a user could bring in problematic code and invite his peers to take a shot at it.

Even though other products, such as Powersoft's PowerBuilder, have a large user base, Cognos users were better organized and better able to provide comprehensive support, Dulebohn said.

Checking out the user base is a good way to determine vendor viability, once you've determined the technology works for you, said Tony Picardi, group vice president at International Data Corp. in Framingham, Mass. "Unless you are talking about a very small vendor and you wonder whether the company is going to be around," user base should take a backseat to specific requirements and whether the tool can meet them, he said.

Today, with some nine applications under her belt, Dulebohn is satisfied that her criteria were on target. All of her projects have come in on time and within budget, and most applications are up and running in a production environment within a few months, she said.

Picom's Vicki Dulebohn concentrated on vendor reputation, support and user base when she chose Cognos' Powerhouse

---

Continued from page 32

phasis on open design so if worse comes to worst, you can separate the application from the underlying product used."

How do you do this? Focus on tools that offer an open application programming interface and that are modular in function — for instance, that let the developer replace the middleware or front-end components with products of his choice. "So in the future, you can address changes whether or not the vendor is there to support those changes," Kelly said.

In fact, Rymer said, placing too much emphasis on the right tool can actually put a company at high risk. "It will raise expectations, and you'll end up making promises of delivering what you're not capable of delivering," he said.

Tool choice, Rymer added, is actually 20% of the job. Most important is having the skills, processes, discipline and design skills in place: "If you're a shop coming out of Cobol and you're coming late into client/server but the company is risk-averse, if you jump into object-oriented you're in trouble."

"The strategy is to get as independent of the technology provider as you can," said Tom Robben, a senior Wall Street IS development executive. "Because fate is funny."

Written by Alan Alper, editor of Client/Server Journal, Mary Brandel, senior editor of Client/Server Journal and Avery Jenkins, a freelance writer in Ansonia, Conn.

PHOTOGRAPHY BY MICHELLE ANDONIAN

CASE STUDY: OUT ON THE FRONTIER

Forte's Three Tiers Lead Corning's Way

At Corning, Inc.'s Telecommunications Product Division, there is little concern that the chosen application development tools are being employed by only the few and the brave.

Nine months ago, Corning selected Forte Software's tool suite for building three-tier applications across its organization, even before Forte broke the 100 user organization mark. (Forte now boasts 150 users.)

Having already deployed sales support applications developed with Forte, Corning analysts are now preparing to create both control room and shop floor applications at the company's fiber-optic wave guide manufacturing facility in Wilmington, N.C.

ROBUST, FLEXIBLE AND EXPANDABLE

Corning's decision to go with Forte was based on the product's robustness, flexibility, expandability and architecture. "We can't run unless our system and our networks are up.... We wouldn't be building mission-critical applications with Forte if we didn't have confidence in it," said Mark Joyce, supervisor of fiber systems engineering computing and information systems.

Before purchasing Forte, "we beat the product up pretty good" for about five months, Joyce said. And Corning had already run into two-tier application limitations. "You wind up with either very fat clients or fat servers, and where do you store your business rules?" Joyce asked.

A three-tier architecture such as Forte's offers Joyce and his staff some strong advantages, he said. "If you can isolate the business rules from servers and clients, it makes the application much more maintainable."

Using Forte, Joyce's group breaks up the application into a number of pieces and distributes them across the network. In addition, "we don't have to make that decision a priori," he said.

But companies need to be cautious before betting heavily on relatively new, untested development products, warned Tony Picardi, group vice president at International Data Corp. in Framingham, Mass.: "There are some other tools that are more established than Forte" that also provide a three-tier architecture.

Forte's lack of a large user base doesn't faze Joyce, however. Despite the small number of users, "we are not alone," he said. Some very large companies have also made substantial investments in Forte, and "that gives me confidence, even though it's a Version 1 product," Joyce said. (See the review of Version 2 on page 57.)

NO COMPETITION

Corning programmers and analysts come from a mainframe, procedural code background, with a specialty in Texas Instruments' Information Engineering Facility (IEF) CASE product.

But despite that background — and TI's first attempts to bring IEF into the client/server environment — Joyce said he sees little future for this methodology.

"The major problem we have with IEF is it's an older architecture that's being stretched to its limits," he said. "It's not object-oriented; it's your traditional structured code."

TI, however, said it now offers a new client/server programming environment, Commander, that was built from the ground up to provide a component-based architecture that supports code reuse and three-tier applications [CSJ, April 1995, What's New].

And although Powersoft's PowerBuilder has an undeniably large following and is used at other Corning divisions, this application development environment holds little appeal for Joyce, even in its next release, which is reportedly three-tier.

Corning's Mark Joyce isn't afraid of being a pioneer: 'We wouldn't be building mission-critical applications with Forte if we didn't have confidence in it.'

The current version "doesn't have the object orientation [or] the broad platform and operating system support we were looking for," Joyce said.

Moreover, because Forte was designed from the beginning to be three-tiered, Joyce said he thinks Forte will remain a better product than PowerBuilder, which had to be rearchitected to reach this level.

PHOTOGRAPHY BY WILL MCINTYRE

Insane Expectations

JIM STIKELEATHER

Stikeleather is a consulting partner at The Technical Resource Connection in Clearwater, Fla. His Internet address is stike@trcinc.com.

READING LIST:

- Holdsworth, Jacqueline; *Software Process Design: Out of the Tar Pit*, McGraw-Hill, Inc., 1994.
- Humphrey, Watts; *Managing the Software Process*, Addison-Wesley Publishing Co., 1989.
- Humphrey, Watts; *A Discipline for Software Engineering*, Addison-Wesley, 1995.
- Jones, Caper; *Applied Software Measurement: Assuring Productivity and Quality*, McGraw Hill, 1991.

A quick perusal of trade publications will show legions of vendors offering tools that promise the Holy Grail of software development: reuse, with its resulting quality, faster development and reduced costs.

However, I am reminded of a working definition of insanity: performing the same actions repeatedly while expecting different results. How many tools has IS bought over the years, yet quality, speed and cost effectiveness still elude us. Buying a tool is like taking cough medicine for a nagging cough, when a lifestyle change, such as quitting smoking, is the real answer.

For IS, the real answer — the lifestyle change, if you will — is process.

There are solid numbers on the benefits of process in software development. These include a 35% median improvement in programmer productivity; a 19% median reduction in development time; and a $5 median return on every dollar spent in process improvement. Effective reuse is achievable only if there is a software development process that enables and encourages it.

Numerous "standards" exist for software development processes. The Software Engineering Institute (SEI) has developed the five-level Capability Maturity Model for software development. The International Standards Organization in Geneva has issued the ISO 9000 series. There is also the IEEE Standard for Developing Software Life Cycle Process and the ACM's Coordinated Software Development Model. ANSI 016 is the working number of the planned ANSI standard that will adapt "Information Technology: Software Life Cycle Processes" for U.S. software, and there are assorted military standards.

Despite the alphabet soup, everyone should be investing in process, but how to get started?

JUST BUYING TOOLS IS NOT ENOUGH; THE PROCESS NEEDS TO CHANGE AS WELL.

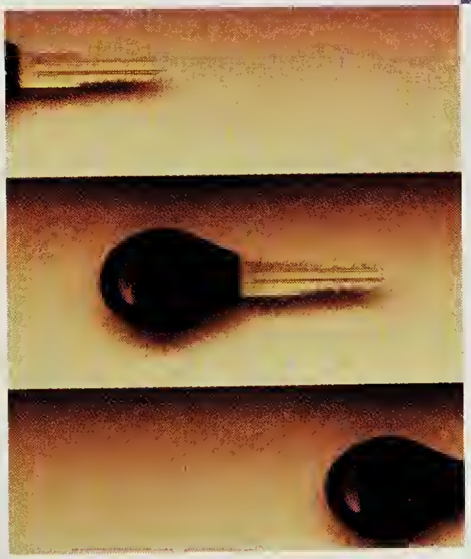
- Like quitting smoking, at first glance, developing a process is a binary decision: Do it or don't. Believing this, many companies have told their staffers, "Quit your current bad habits, and tomorrow start with a new process-based discipline." This approach fails with real people. Behavior modification is the key: Learning a little, doing it a little, learning more, doing more.
- At a minimum, whenever you contract for software development, demand either an ISO 9000 (9001, 9002, 9003) certificate or an SEI Level 2 assessment. It helps ensure you will get what you are paying for.
- Read. The reading list at left will help.
- Contact the SEI for an assessor, and assess your organization. This will tell you what to work on first.
- Think about your staff. It is not likely you will be able to "hire the problem" away — you will have to grow your own.
- Design your own process. None of the "standards" enforce the details of the software development process, only the deliverables, expected outcomes and behaviors. Sam Holcman's "A Systems Methodology" (*Software Engineering Productivity Handbook* by Jessica Keyes) provides a simple guide to determine the merit of the development process. Some of the questions include: Does it simplify the development process? Does it standardize the development process? Is it customizable? Can changes be verified?
- Get management support. This should be simple. What CFO would walk away from a 5-to-1 return on investment?
- Lastly, start slowly. Don't try to do everything at once. Understand the process and business motivations. You are messing with the status quo, people's minds and their behaviors. As with any new skill, there is a period of negative productivity that eventually gives way to much improved performance. ◪

PHOTOGRAPHY BY CHARLES TROTTA

Legacy Renewal

Object Orientation

Enterprise Integration



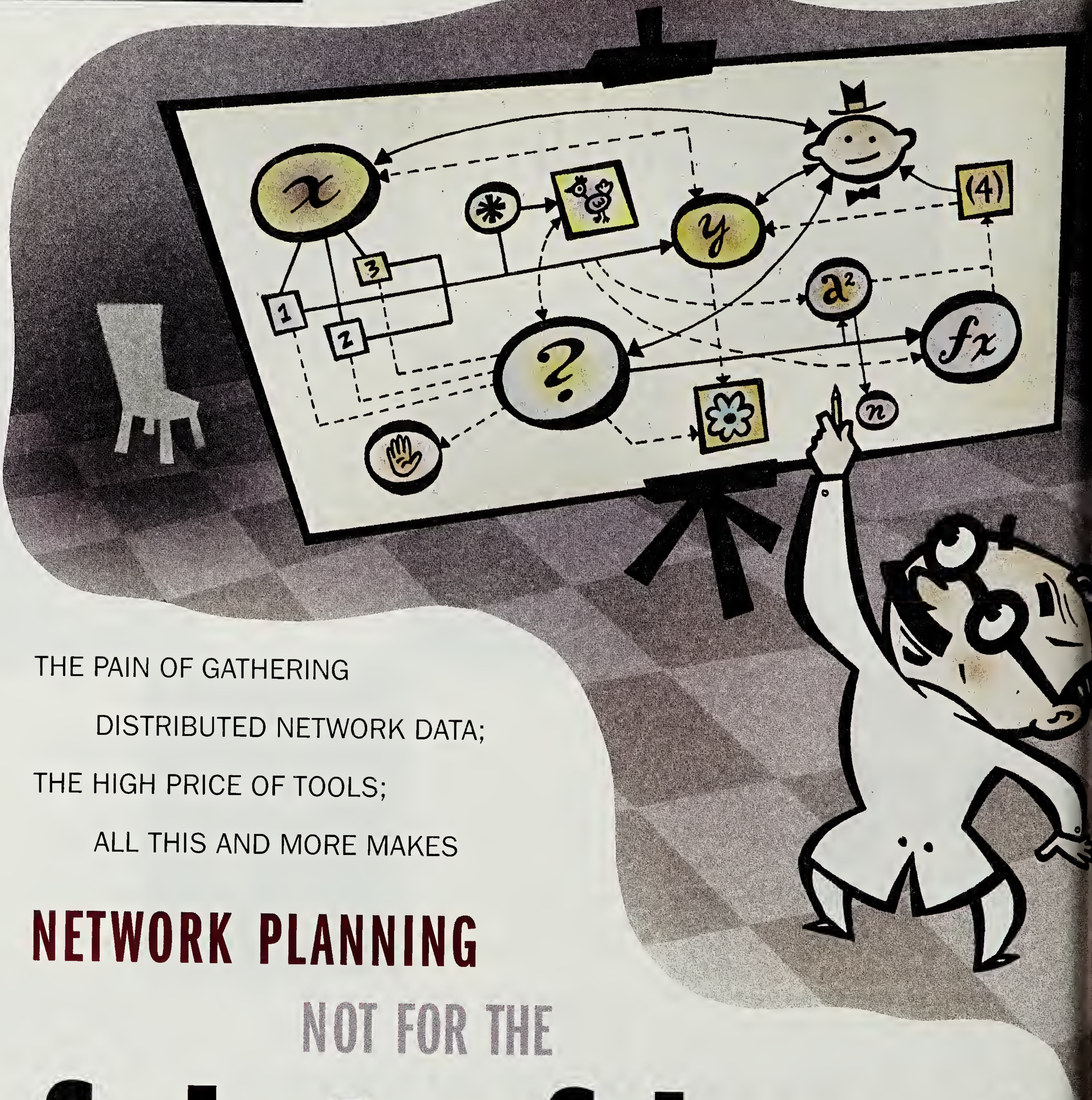
Rapid Application Development

Client/Server

It's easy to get information on these key issues. Now you can also have the benefit of experience.

You'll find it in Amdahl's seasoned perspectives on five of the most critical issues in information technology. These publications will help you identify the core considerations for your company, so you can migrate successfully from debate to solution. Call 1-800-223-2215 to order your copies, or visit our Web site at *http://www.amdahl.com*. Either way, we'll help you put these issues into perspective.

amdahl®



THE PAIN OF GATHERING
DISTRIBUTED NETWORK DATA;
THE HIGH PRICE OF TOOLS;
ALL THIS AND MORE MAKES

NETWORK PLANNING NOT FOR THE faint of heart

To hear information systems managers tell it, many would just love to do network capacity planning — if only they could afford it.

Like Paul Brown, director of distributed computing at Helix Health Systems in Baltimore, many are looking for something like a crystal ball: "What we want is to set up a [topology] map in NetView [and say], 'If we're at 10% utilization with 1,200 devices now and we add 10 more servers through our current SMDS WAN connection, that's going to use what percent of our existing bandwidth?' " he said.

Brown plans to find out by using CACI Products, Inc.'s Comnet III, one of a growing number of systems that allow network engineers to model the complex, volatile, highly interactive environments that are distributed computing networks. Comnet III will help Brown build models out of regularly updated network topology and traffic information gathered by IBM NetView for AIX.

"We can say, 'This is our traffic baseline; if we add [to it], what will happen?' It's a strategic planning tool," he said.

Many IS and networking departments apparently agree with Brown as to the potential value of network simulation, modeling and planning tools. But few have been able to develop the employee mind-set, commit the resources or even find the skills necessary to use such products.

"I have looked at [network simulation tools], but no one [on staff] is willing to use them," said a network manager at an otherwise technologically aggressive utility. "I don't know if it's 'not invented here' syndrome or just resistance to change."

Clearly, many others feel the same way. "Based on talking to vendors, I would guesstimate that the 1994 market was $60 million to $70 million worldwide," said John Morency, a principal at The Registry, a Stratham, N.H., consultancy. Compare that to a total network management hardware and software market of $1.2 billion to $1.3 billion, he added.

Tools such as Comnet III, in addition to MIL3, Inc.'s OpNet, Systems and Networks, Inc.'s Bones, Make Systems, Inc.'s NetMaker XA and Optimal Networks, Inc.'s Optimal Performance, have been hovering at the bleeding edge of the network management market for almost a decade now. They are intended to create electronic models of the traffic patterns, stress points and potential bottlenecks of distributed computing networks.

IS can then play a variety of what-if games, such as "What if we add 250 users?" or "What if we migrate all of our clients to Win 95?" or "What if we implement Lotus' Notes across the enterprise?"

The potential payback of using these tools is extremely high, analyst and user sources testified. However, companies are still having difficulty justifying the cost — $30,000 to $50,000 for the package plus a high-end, dedicated workstation.

And despite efforts to make such tools easier to use, it can take six months to a year to "build a skill set and then put together a repertoire of parameters that accurately represent the network," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy.

Before they can build effective network

Please turn to next page

BY ELISABETH HORWITT

ILLUSTRATION BY EDD PATTON

Continued from page 39

models, many firms will need to pull up their socks when it comes to keeping track of their own installations. According to a survey by The Yankee Group, 49% of 100 respondents said their network documentation was marginally accurate and current; another 21% said it was insufficiently accurate and current.

A lot of companies are "just not facing reality" about the state of their network planning, said Jennifer Pigg, director of data communications at Yankee Group. When you ask them if they think they're doing a good job, they say yes. And yet, these same users indicate that "the quality of network status information . . . is rotten."

The good news is that tool makers have been working to ease and even automate the task of collecting configuration information. One major breakthrough is that most tools can now gather data about network traffic patterns directly with network monitors, such as Network General Corp.'s Sniffer or other remote monitoring (Rmon)-based probes.

Others can gather network topology information directly from enterprise management platforms such as IBM's NetView for AIX.

PROFILES IN NETWORKS

Most of the leading tool vendors also provide a set of predefined profiles that describe the behavior of network hardware devices, client and server hardware and operating environments, transport protocols such as TCP/IP and even network applications.

With the current version of CACI's Comnet III, for example, "When I bring up a TCP/IP line in the model, it has the appropriate parameters in default. Back in the days of the original systems simulators, you had to program things from scratch," said Jim Cheeseman, an advanced specialist at 3M Co., a St. Paul, Minn.-based manufacturer.

Of course, the user often has to add installation-specific information, such as router buffer size, Cheeseman said. Comnet III helps by bringing up a checklist of optional parameters, but the choices can be daunting. For example, "it asks, 'Do you want a sliding window?' I don't even know what that is," he said.

But even the most user-friendly package cannot "know what parameters are in the network and how to interpret results," Cheeseman said. That is still the network analyst's job.

3M has been using Comnet III for four or five projects this year with good results, Cheeseman said. One recent project involved modeling the company's Internet firewall. "We can't model traffic from the servers to the 'net because we don't know what's out there. But we can model our users' connection to the 'net," Cheeseman said.

As it turns out, the actual performance numbers came very close to what the model predicted. Cheeseman said he successfully learned to use Comnet III by taking the five-day training class that CACI offers. "It does take some background in statistical analysis, but most experienced network people have that," he said.

Using NetView for AIX's automated network mapping tool, 3M's network group completed the modeling in just a few days. But then the work began. "What can really take time is finding the information to fill in the numbers" for each device on the map, Cheeseman said, like the response time of a server. That, he added, took a month.

The group recently started a much more complex project: modeling the overall availability of the 3M host systems. Comnet III will help develop a simulation of a database query traveling from PCs through LANs, WANs, routers and bridges to the mainframe and back.

Setting up the topology should take a couple of weeks, Cheeseman estimated. But getting all the numbers to feed into that model, he said, will take months.

For example, someone has to tell Comnet the mean time between failures of the IBM IMS database running on a particular mainframe model, as well as the mean time between mainframe repairs.

"Eventually, we hope to use [the tool] for improving response for client/server systems," Cheeseman said. However, this involves an even more complex model containing items such as arrival rates of things coming into the networks, buffer sizes and the time it takes a server to process a typical transaction.

Cost and risk reduction are motivators for Delmarva Power & Light Co.'s recent purchase of Make Systems' NetMaker, according to John Scoggin, supervisor of network operations at the Newark, Del., utility.

BE A MODEL OR JUST LOOK LIKE ONE

Companies should seriously consider a network modeling package if they meet all or most of the following criteria, analyst sources said:

NETWORK SIZE AND COMPLEXITY. "Simulation tools are really effective when you are looking at large branch networks, thousands of end systems, 50-router backbones and above," said John Morency, a principal at The Registry, a Stratham, N.H., consultancy.

GUARANTEED SERVICE LEVELS. It has to be a network where a certain level of performance and availability is critical to your business, said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy.

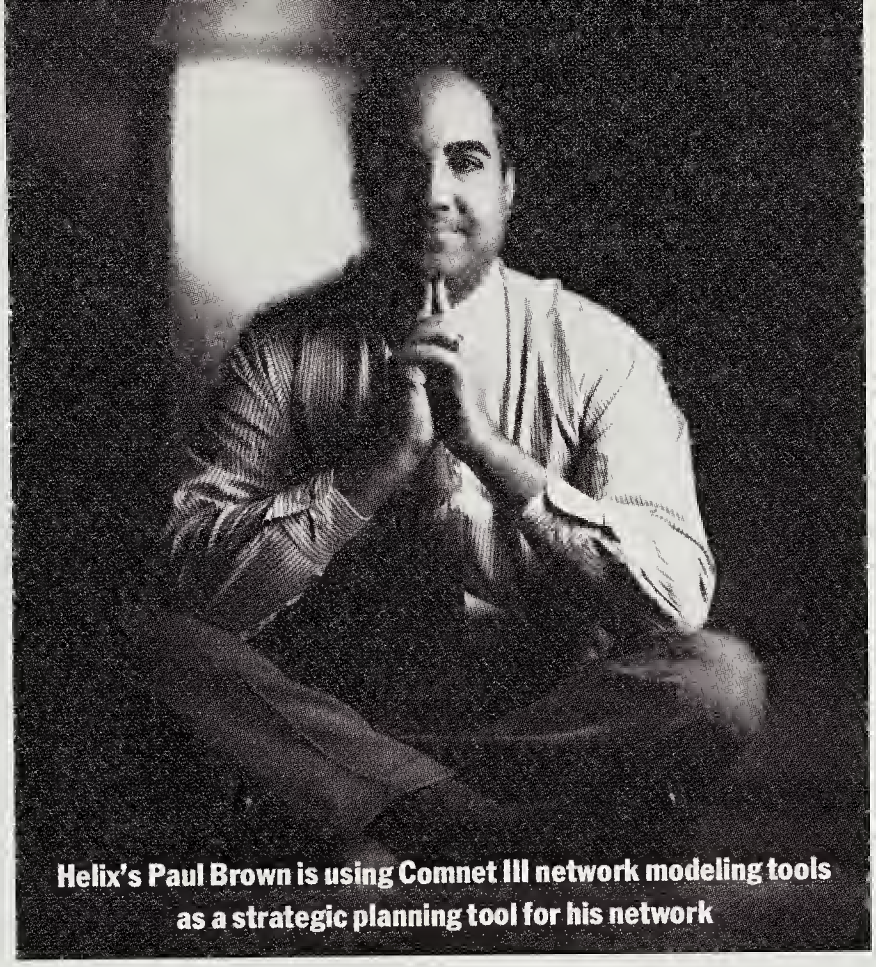
VOLATILITY. "If your network is experiencing a lot of changes in traffic requirements, service capabilities and devices, simulation tools are generally worth buying," Nolle said.

NETWORK COST AND/OR CAPACITY CONSTRAINTS. Companies that can go on "oversupplying network capacity" to deal with potential bottlenecks can forget capacity planning, Nolle said.

ILLUSTRATION BY EDD PATTON

Scoggin's group is trying to model the potential impact of SAP AG's R/3, which is "the most god-awful absorber of resources," Scoggin said. "We want to make sure we have adequate [LAN and WAN] capacity for the load." (See "Administering the R/3 Rx," page 18.)

The tool is being used for cost avoidance "because we don't want to overbuild the network" and to avoid "having a disaster on cutover day for SAP, like having the network roll over dead," Scoggin said.


Helix's Paul Brown is using Comnet III network modeling tools as a strategic planning tool for his network

A major source of network data to feed the NetMaker models are Rmon probes — 50 in all — that have been installed on LAN segments around the company, Scoggin said. To get an accurate model of the SAP application's impact on network traffic, "We are just sticking an Rmon probe on a segment dedicated to carrying SAP traffic, as a test bed," he added. As yet, Scoggin acknowledged, "We are not sure what we'll do about measuring SAP traffic over the internetwork."

One helpful development for companies such as Delmarva is a growing body of Rmon-based probes that can monitor application-specific traffic. For example, Axon Networks, Inc. in Newton, Mass., recently came out with an application-specific Rmon probe that can feed directly into NetMaker, Scoggin said.

The fact remains: Full-blown, in-house network simulation doesn't make sense for everyone. Out of 80 large companies regularly surveyed by CIMI, perhaps nine or 10 could justify buying a network simulation tool, according to Nolle (see story below).

Indeed, "A lot of people are still flying by the seat of their pants" when it comes to network engineering, said Roger Coates, coordinator of the technology group at Pan-Canadian Petroleum Ltd. in Calgary, Alberta. That's because they can: Most networks still have plenty of extra capacity built in. "The bad news," Coates said, "is that [all that extra capacity] makes it hard to tell where a problem lies."

Horwitt is a freelance writer in Waban, Mass.

Simulation Services

For companies that cannot justify using network modeling tools in-house, there is another option: hiring a network systems integrator or consultancy.

Network modeling services are available from network service providers such as AT&T Corp., network systems integrators such as Unisys Corp. and consultancies specializing in network design and cost analysis, such as Monarch Information Networks, Inc. in New York.

AT&T, for example, uses Network General Corp.'s Sniffer monitoring tool and CACI's Comnet III to take a projected user growth in the business plan and then run simulations to see at what point the network is likely to break down, said Ken Gloster, senior partner at the carrier's networking and architectural consulting practice.

Such services do not come cheap, Gloster acknowledged: "The big cost is setting up the model — on the order of $200,000." Rerunning the baseline to do additional simulations might cost $30,000.

However, these services make sense for companies such as Aramco Services Co., which cannot justify using modeling in-house and yet wants an accurate way to measure the effectiveness of its current network design and future network plans.

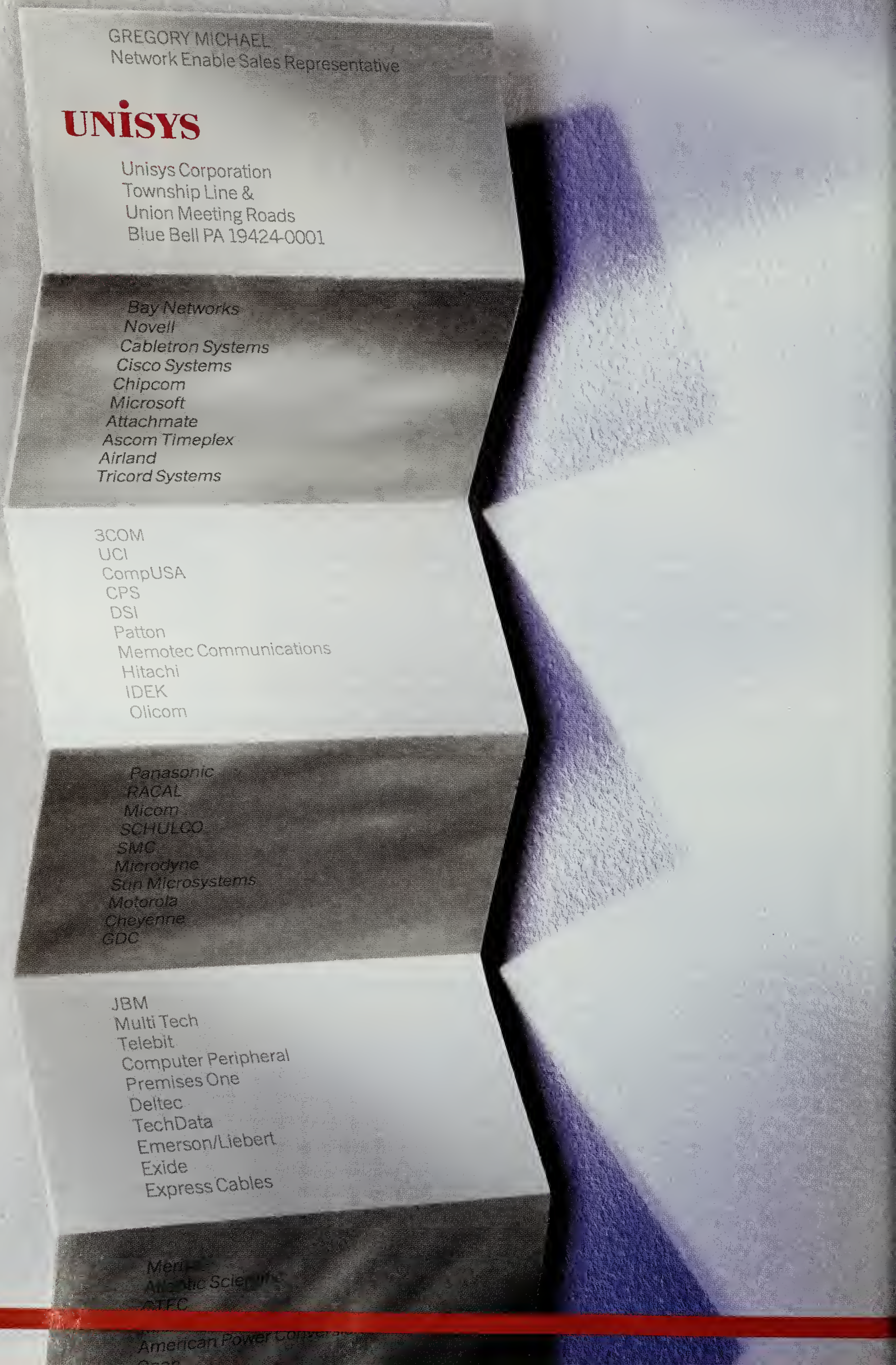
"We have a fairly beefy network in place, [but] there are only 500 people in our facility," said John Wolfe, supervisor of technical operations at the Houston-based oil firm. Aramco recently called on AT&T to do a "network wellness study," in which the provider reviewed what the in-house network staff had done and "determined if we were heading down the right track," he said.

For example, Aramco's in-house network staff had determined that migrating to frame relay made sense as a way to boost wide-area network capacity. "The good news is that they validated what our own people told us," Wolfe said.

Wolfe said he did have some qualms about whether AT&T, as Aramco's carrier, could give an unbiased judgment. However, "it's really a cost issue — frame relay vs. dedicated circuits, which are both AT&T offerings," he added.

Wolfe agreed with Gloster that the service is not cheap. Nevertheless, Aramco is likely to use it again, "not regularly but on an as-needed basis when we reach a transition point in our network," he said.

PHOTOGRAPHY BY ROBERT BURKE



GREGORY MICHAEL
Network Enable Sales Representative

UNISYS

Unisys Corporation
Township Line &
Union Meeting Roads
Blue Bell PA 19424-0001

Bay Networks
Novell
Cabletron Systems
Cisco Systems
Chipcom
Microsoft
Attachmate
Ascom Timeplex
Airland
Tricord Systems

3COM
UCI
CompUSA
CPS
DSI
Patton
Memotec Communications
Hitachi
IDEK
Olicom

Panasonic
RACAL
Micom
SCHULCO
SMC
Microdyne
Sun Microsystems
Motorola
Cheyenne
GDC

JBM
Multi Tech
Telebit
Computer Peripheral
Premises One
Deltec
TechData
Emerson/Liebert
Exide
Express Cables

Meri[illegible]
Atlantic Scientific
GTEC
American Power Conversion

© 1995 Unisys Corporation. Network Enable is a registered service mark of Unisys Corporation.

Unisys Network Enable.

The one source for the many resources your network requires.

Building a multivendor network is not for the impatient, the easily depressed or the faint of heart. Just ask anyone who's tried to find, choose and manage dozens of vendors themselves.

Unisys Network Enable is an easier, more efficient way to solve the problem.

With worldwide depth and expertise, we specialize in designing, installing and maintaining network solutions in multivendor environments.

This means that all you have to do is make one call and we can bring you the best possible solutions, no matter who happens to make them. And that includes over 9,000 products from over 130 vendors.

Besides providing you with the advantages of a single, fully accountable resource, there are many other reasons to call Network Enable.

For example, there's our impressive range of services. These include the creation and support of LANs, WANs and backbone networks. Preinstallation configuring and staging. And Unisys Desktop Services, our premier enterprisewide support program.

Now that you know Network Enable is the only name you need to know, there are two things you should do: Get rid of all those other business cards. And contact us today on the Internet at **http://www.unisys.com/adv** or by calling **1-800-874-8647, ext. 134.**

UNISYS

THE INFORMATION MANAGEMENT COMPANY

taking the bite out of purchasing

COMPANIES ARE FINALLY RECOGNIZING THE MANY BENEFITS OF AUTOMATING THEIR INTERNAL PURCHASING PROCESSES

BY LINDA WILSON

You'd expect a large accounting firm to count its pennies. But Coopers & Lybrand found it was counting a few too many when it came to one of its more mundane corporate tasks: purchasing office supplies. With each pencil, pad, copier or computer, Coopers & Lybrand was spending an average of $125 on the purchase process alone.

"A lot of the cost is associated with delays in getting the order off," said Jeffrey Block, director of national purchasing at the New York-based Big Six accounting firm. With the current routine, it could take from one week to three months to complete the process. And it's not exactly time well spent: Purchasing staffers are pushing paper rather than negotiating contracts.

But you can't blame Coopers & Lybrand. Most large U.S. organizations have historically thrown money at bureaucratic, delay-ridden purchasing processes. That's because until recently, companies have focused on automating the external purchasing process — sending purchase orders and invoices to business partners — in many cases after being pressured into it.

"A lot of companies are moving to supply chain management before they have really perfected their internal infrastructure," said Lisa Williams Walton, professor of business logistics at Pennsylvania State University in University Park, Pa. "It's like they've moved toward marriage but haven't yet checked to see if they are healthy emotionally."

Time to get introspective. Although it's still a burgeoning trend, companies such as Texas Instruments, Inc. and Arizona Public Service Co. are now realizing some of the benefits of automating the internal purchase process: lower costs, faster cycle times, better negotiating power and more accurate billing/ordering.

In addition, a variety of vendors have recently launched commercial products designed to ease the transition to electronic purchasing (see listing page 46).

Using a system from IBM Electronic Commerce Services, Coopers & Lybrand expects to cut its purchasing costs by 60%, bringing the per-order cost to $50. Complex orders will take two days to process, while simple ones can be accomplished in minutes.

As Coopers & Lybrand has found, the underlying technologies are widely available. What's not so easy is rationalizing the new purchasing process with other related functions such as accounting. Plus purchasing personnel have to develop a whole new mind-set.

"Far too many companies simply automate the purchasing department instead of re-engineering the process throughout the company," said Jack Shaw, president of consulting firm Electronic Commerce Strategies in Marietta, Ga.

THE HEART OF THE MATTER

The centerpiece of Coopers & Lybrand's new purchasing process is a CD-ROM-based electronic catalog from IBM that lists products from numerous vendors. Now just in test phase, the OS/2-based system will let employees place orders by pointing and clicking on desired items. The software will then create an electronic order, which will be routed electronically via Lotus Development Corp.'s Notes for supervisor approval.

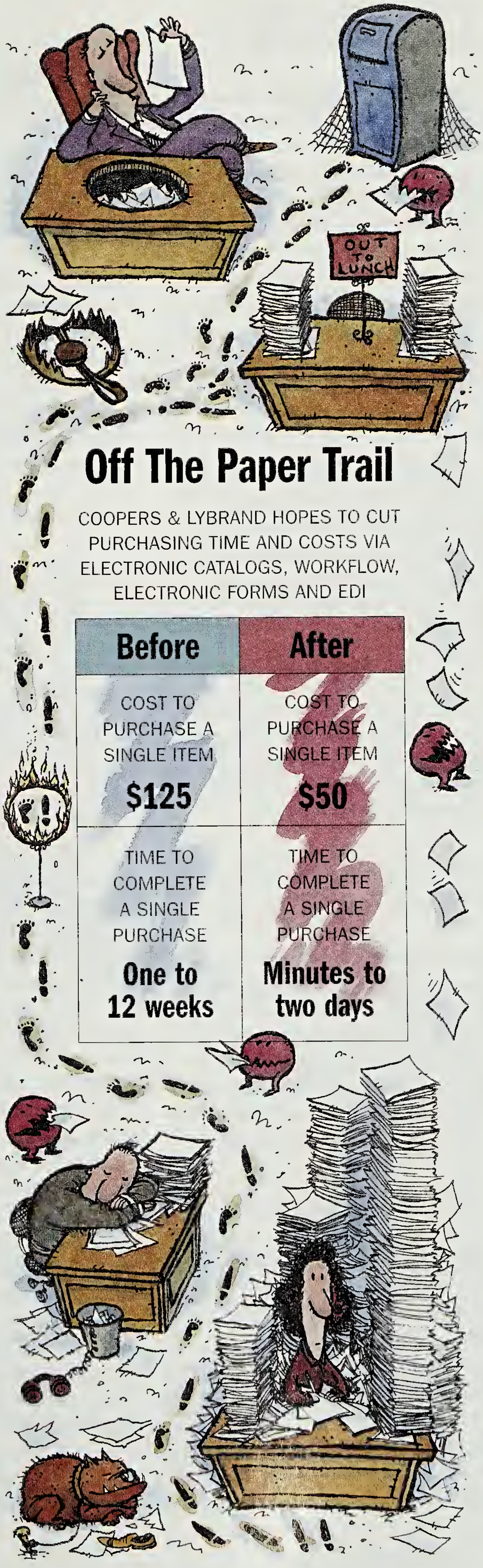
Once approved, the order will be routed to the Coopers & Lybrand financial system, which will charge the appropriate department for the order and cut a check for payment. The orders will be forwarded to suppliers electronically via Advantis, IBM's value-added network service. Advantis can also forward invoices and shipping notices from suppliers back to Coopers & Lybrand.

Product information, including graphics, is stored in a proprietary database IBM developed specifically for this purpose. Order records are stored in DB2. Block said he expects to port the system to Windows clients and Oracle Corp.'s relational database management system.

Block expects to eventually load the program on 10 centralized servers clustered to serve all 120 U.S. offices. Nine of the servers will contain copies of the catalog system, and the tenth server will act as the gateway to Advantis via a switched 56K bit/sec. connection. "Anybody on the network could theoretically use it," Block said.

Before the system is rolled out nationally, it must first be integrated with SAP AG's R/3, which is in the process

Please turn to next page



Off The Paper Trail

COOPERS & LYBRAND HOPES TO CUT PURCHASING TIME AND COSTS VIA ELECTRONIC CATALOGS, WORKFLOW, ELECTRONIC FORMS AND EDI

Before	After
COST TO PURCHASE A SINGLE ITEM **$125**	COST TO PURCHASE A SINGLE ITEM **$50**
TIME TO COMPLETE A SINGLE PURCHASE **One to 12 weeks**	TIME TO COMPLETE A SINGLE PURCHASE **Minutes to two days**

ILLUSTRATION BY DAVID CLARK

PRODUCT PROFILES

It's likely that the process of re-engineering purchasing will gain momentum — or at least publicity — in the near future as software vendors launch commercial solutions. A number of these solutions revolve around the concept of electronic catalogs, which are compilations of products and prices usually stored on CD-ROM or a server. The catalogs let users browse and order products on-line.

IBM Electronic Commerce Services

Although they are not yet commercially available, these comprehensive electronic catalogs that IBM is developing for beta customers include products from myriad vendors. The IBM catalog includes four-color photos and descriptions, facilitating comparisons with competing products.

The service will also move orders and invoices as well as perform other transactions between customers and suppliers through IBM's value-added network (VAN) service, Advantis. Commercial availability is expected next year.

Sterling Software, Inc./ Vicom Multimedia, Inc.

A similar service, also still under development, involves a partnership between Sterling, a Dallas-based vendor of electronic data interchange (EDI) software, and Vicom, a Calgary, Alberta-based company that develops electronic multimedia catalogs on CD-ROM. Commercial availability has not yet been decided.

Texas Instruments, Inc.

The Express Buy Catalog does not include EDI VAN services, but it does allow customers to develop electronic catalogs.

TSI International

This EDI software vendor in Wilton, Conn., offers On Call EDI, an electronic catalog exclusively for hospitals.

Continued from page 45

of being rolled out. Integrating the catalog and accounting systems is not expected to be difficult, as IBM has developed standard application programming interfaces to interface with R/3.

Like Coopers & Lybrand, TI was looking to take the waste out of low-cost, high-volume purchases. Given that 80% of all TI purchases were under $500, it didn't seem right to spend $68 per line item to process an order.

The company's Express Buy Catalog system, designed with TI's computer-aided software engineering tool and now sold commercially, reduced processing costs to $2.45 per line item, whether for hand tools or electric parts for buildings.

TI went on-line with its first supplier in June 1994 and now has seven on the system. Users access the Hewlett-Packard Co./Oracle system via a nongraphical user interface front end running on PCs and workstations. Orders are sent via electronic data interchange software, which also resides on the HP 9000 server.

When vendors electronically return advance ship notices to TI, Express Buy creates a separate file for accounting, which is then transmitted in batch mode to TI's mainframe-based corporate accounting system. The only paper involved is a pick-and-pack slip, which tells supplier employees what to pack in which boxes.

Arizona Public Service, an electric utility based in Phoenix, bought TI's Express Buy Catalog as a key component of its overall purchasing strategy designed to free staffers from routine, paper-pushing tasks.

"We want our buyers to spend time where there is a large investment involved," such as for heavy equipment used in the production and distribution of power, explained Wendy Greess, project manager for materials logistics information systems. "We expect savings to come from negotiations with those suppliers," she said.

Arizona Public Service's Wendy Greess expects savings from supplier negotiations

Indeed, experts said, this is a main goal of streamlining the purchasing process. Purchasers should spend time where their expertise is essential, such as in negotiating umbrella contracts, overseeing relationships with suppliers and developing purchasing policy and strategy.

To meet that goal, Arizona Public Service is rolling out Express Buy to allow employees to purchase office supplies electronically from Boise Cascade Office Products Corp. in Itasca, Ill., without going through the purchasing department.

For Arizona Public Service, Coopers & Lybrand and any other company that re-engineers the purchasing process, new systems mean new job descriptions for purchasing employees. "We will have a major change to go through, from a process orientation to a contract orientation," Block said. The 10 Coopers & Lybrand purchasers will focus on hammering out umbrella contracts and reducing the number of suppliers from 1,000 to 200.

By forging closer relationships with fewer suppliers, Coopers & Lybrand should have both the time and clout to negotiate better deals.

For Block, who has been working with IBM for two years, that day can't come soon enough. However, as new commercial products and services become available, followers in Block's footsteps may garner similar benefits with less effort because he's already paved the way. ◪

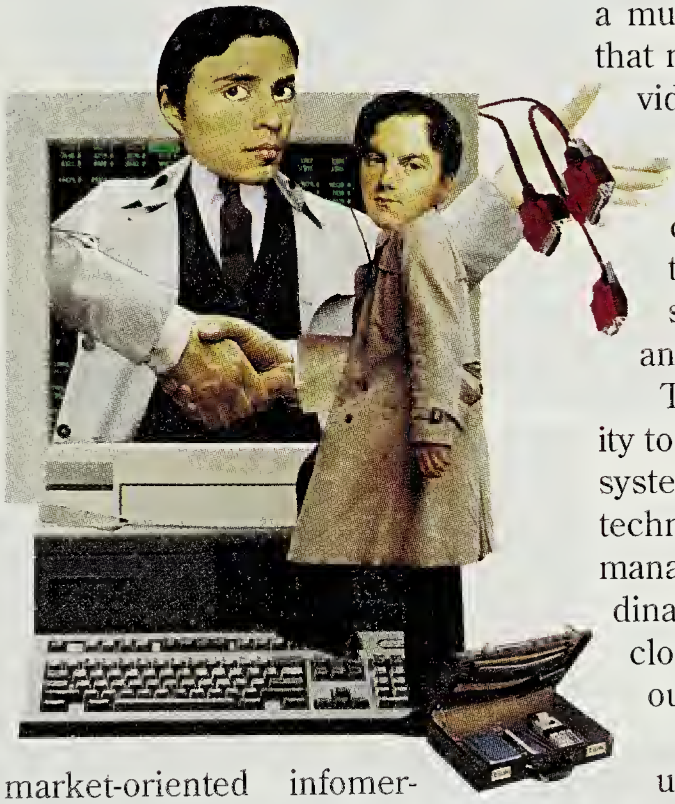
Wilson is a freelance writer in Glen Ellyn, Ill.

PHOTOGRAPHY BY REED RAHN

Understanding Wired Customers

BY JONATHAN VAUGHAN

SHARED VALUES AND TECHNOLOGIES HAVE TO PRECEDE ELECTRONIC COMMERCE



Culture — a word more typically associated with the arts than the sciences — may seem a strange word to use with regard to client/server computing. Yet as we extend client/server technology beyond the bounds of our own organization, as we strive to attain electronic intimacy with our customers and forge a lasting business relationship, we have to deal with two cultures simultaneously: the information technology culture and the world of the wired consumer.

The IT culture at Chase Manhattan Bank includes the traditional world of mainframe and minicomputer production systems and the new world of PC end-user computing. Bridging them is the diverse community of client/server technology.

Despite the differences in background, outlook and technology of these communities, they have been united by a common focus: the need to support the internal business requirements of the enterprise.

The challenge the extended enterprise poses is the need to not just understand the business requirements but also play a part in shaping new business opportunities.

The most visible aspect of these opportunities is the newly networked consumer — a user of technology and a participant in fully distributed computing but not a technologist or an IT professional. Predicting the needs of such a new customer, understanding the market opportunities and risks and developing products and services that fit this emerging culture is as much a matter of anthropology as technology.

In this new information age, we need to entice customers through market-oriented infomercials, respond to their needs with easy-to-use, self-customizable graphical user interface applications and process their records quickly and accurately. We must do this with a level of service that fits our culture while staying current with the customer.

An example of this new extended enterprise is our launch of a banking service — Chase Direct Bank — that unifies back-office production systems with direct customer access via fax, phone or computer. Chase banking services are linked to customers' own PC money management software, connecting back-office bank processing systems to third-party software over public networks.

In this environment, technology provides only part of the answer, working in conjunction with the design, service quality and overall marketing approach. In order to deliver innovative products and services such as Chase Direct Bank, we have had to change people's motivations, values and beliefs — building communities, not just organizations. It is a multifaceted, long-term endeavor that needs to be grafted to the individual culture of the corporation.

At Chase, we link our corporate values of customer focus, respect for one another, teamwork, quality and professionalism across the technology and the business community.

The test of our success is the ability to develop complex client/server systems that require integrating new technology with existing systems, managing global virtual teams, coordinating resources and maintaining close working relationships with our technology partners.

All of these areas call for an understanding of different cultures as well as leadership in bringing them together. Design issues, in particular, cannot be solved without close communication across disciplines. Each program manager is challenged to build (or rebuild) a culture that embraces new and old disciplines, that is open to change but resistant to overenthusiasm, that leverages past efforts but is not afraid to tear down the obstacles to progress.

Vaughan is president of applications systems technology at The Chase Manhattan Bank NA's corporate technology and information services group. His CompuServe ID is 70403,2557.

ILLUSTRATION BY PIERRE-PAUL PARISEAU;
PHOTOGRAPHY BY REINHOLD SPEIGLER

IT'S A DIRTY JOB-- BUT SOMEBODY'S GOTTA DO IT!
MISTER DATA CLEAN
BATTLING the FORCES of
INCONSISTENT PRODUCT CODES!
CONFLICTING CREDIT AUTHORIZATIONS!
DUPLICATE CUSTOMER LISTINGS!

BY TONY BAER

Moving to client/server? Implementing a customer service system? **It can take more time and staff** than you think to get your data clean.

Data quality is somewhat of a motherhood and apple pie issue. It's hard to be against it, but it's still something of a sleeper in the information technology community. As a result, few have any idea how much manpower it will take to do the job.

Why would you clean your data? One reason is the growth of enterprisewide client/server applications that span departments, such as those from SAP AG and Oracle Corp. A customer file, for example, no longer exists in a vacuum; it may also be viewed in product or order configurations and shipping instructions.

"For some clients it's a non-issue," said Burt Rubenstein, vice president of technology at systems integrator Cambridge Technology Partners, Inc. in Cambridge Mass. "But if there is a major change to the business, it can get up to second or third on their priority list."

Or first. Claude Marais, director of IT processing and planning services at Elf Atochem North America, Inc. in Philadelphia, was determined to rationalize the company's data (including 23 payroll systems and 18 general ledgers) before embarking on an SAP R/3 migration. And Marais knew just how dirty data can get. In 1990, Elf Atochem merged three businesses and then spent three years consolidating dozens of standalone systems, which held inconsistent product codes, conflicting customer credit authorizations and duplicate/dormant customer listings.

Marais organized teams of employees that set up data warehouses to stage the data using a PC-based statistical quality assurance tool from QDB Solutions, Inc. in Cambridge, Mass. The teams used the tool to analyze the quality of customer, supplier and product data and graphically display the percent of data that was incomplete, used invalid codes or deviated from format.

"It didn't take brain surgery to do this" because end users were familiar with the data, Marais said. And the costs so far, including $10,000 for software and $300,000 for consulting, have been modest, in his opinion.

But it has taken manpower. Marais dedicated three full-time IT people to the three-year R/3 implementation, plus roughly 20% commitments from four to six line-of-business staffers for each four- to six-week phase of the project.

In the end, data cleansing helped Elf Atochem's first business unit migrate to R/3 on time and under budget (see story page 28).

Elf Atochem's experience is not unusual: Rationalizing disparate data can consume 5% of an overall R/3 project cost, said Ric Andersen, who heads Price Waterhouse's Southeast region R/3 practice.

A small but growing number of commercial tools are available from

Please turn to next page

ILLUSTRATIONS BY THE DYNAMIC DUO

Continued from page 49

the likes of Innovative Systems, Inc. in Pittsburgh and Harte-Hanks Communications, Inc. in Billerica, Mass., that clean specific types of data, eliminate duplications or provide general-purpose tool kits or parsing algorithms to cleanse data.

In the R/3 world, ICS Deloitte's Universal Portable Interface can find duplicates, while R/3 can reject out-of-range data for given fields. But "there's no silver bullet," Andersen said. Mostly, it takes time and manpower, he added.

LEARNING THE HARD WAY

And manpower doesn't just mean IT people. At The Chase Manhattan Bank NA in New York, a massive data-cleaning project might have gone more quickly if Chase had gotten line-of-business staffers involved earlier, said Gloria O'Neal, technology group vice president.

In all, Chase invested roughly 80 man-years in the project, dedicating up to 22 people over the past four years to clean 20 million records.

The goal was to create a new customer database to track all accounts by household. It would have to be updated daily from 70 source databases maintained by 18 business areas and legal entities. The data had to be correlated and cleaned, so the group focused solely on cleaning names and addresses.

Chase worked with Innovative Systems, whose software compares name and address listings with a data dictionary of 2.4 million names and 60,000+ parsing rules. "Our biggest problem was volume," O'Neal said.

Limiting your sights seems to be a key success factor for companies with huge data reconciliation projects. US West, for instance, had a multiterabyte-size data quality problem, with information scattered in many stand-alone databases.

Complicating the job were conflicting formats for items such as street address. So service orders often required manual intervention, and unused phone lines or switches couldn't be freed quickly enough to meet the needs of the company's fast-growing, 14-state service region.

Cleaning TIPS

Consolidate before you cleanse. Data such as customer credit authorization levels that looks OK in one business unit's database may be out of range for another.

Be patient. There's no shortcut to doing real legwork. The people who work with the data daily are invaluable in helping navigate weird data structures or other idiosyncrasies.

Take time to develop business rules. Otherwise, you'll have too many exceptions to screen out. Don't clean data to an "ideal" format. Ask users how they think the data should look.

If you're willing to pay for an outside provider to help clean your data, be sure to train at least one or two members of your staff so you don't lose the expertise when the project ends.

Triage was step one, said Gaile McCuaig, database quality manager. US West targeted the six databases with the most impact, then limited efforts to the largest, fastest-growing cities. McCuaig recruited four full-time project managers and part-time commitments from 18 line-of-business and subject experts.

The team devised rules regarding data structures and relationships for each database and region. Apertus Technologies, Inc. in Minneapolis developed and ran an object-oriented program to develop rules regarding data formats and relationships among information on multiple databases, such as repair service. Four years into the project, the team considers itself halfway to its goal.

But you don't have to be the size of Chase or US West to have data quality problems. Data complexity can get you, too.

When J. M. Huber, a natural resource products manufacturer in Edison, N.J., decided to replace its obsolete stand-alone systems with client/server manufacturing, financials and human resources applications, it had to untangle the confusion over data relationships.

And John R. Murphy, data administration staff specialist at Huber, said data quality had to come first. "Once you load a relational database, it's hard to change the primary data relationships," he said.

Customer relationships were especially daunting. Huber often sells to internal and external customers alike, and the type of external customer varies greatly. Resolving the issue was critical to rationalizing Huber's pricing, credit and procurement strategies.

The firm opted for a two-step process and dedicated two full-timers to the job. Step one is to use programming tools from Vality Corp. in Boston, which offers pattern-matching algorithms and filters from which the team developed cleaning programs. Huber will then send the cleaned data to The Dun & Bradstreet Corp., which will identify which companies are related and how.

Four months into the project, Huber estimates it is 70% finished with Vality, but it has not yet sent anything to D&B. So far, Huber has managed to pare customer files by 36% by eliminating dormant accounts and redundant listings.

Big or small, the job of data cleansing amounts to a lot of work but promises big returns. US West, for instance, has recovered $35 million in assets so far and paid for the system in the first year. But the initial step is recognition.

"We often take data quality for granted," Elf Atochem's Marais said. "When we look at the intellectual value of the company, we usually don't measure the asset value in the same way as production inventory." ◪

Baer is a freelance writer in Newton, Mass.

DECEMBER 5-7, 1995 • NAVY PIER • CHICAGO

THE LARGEST & MOST INFORMATIVE DATABASE & CLIENT/SERVER EVENT OF THE YEAR!

In-Depth Coverage of Today's Hottest Topics:

- Data Warehousing & OLAP
- Parallel Databases & VLDBs
- Middleware
- Client/Server Tools and Application Development
- Systems Management for the Client/Server Environment
- Object-Oriented Technologies
- Multi-Tier Architectures
- Extending Relational DBMSs
- Client Server Application Packages

and much more!

If You Attend Only One Database & Client/Server Event This Year, Make Sure It's The One And Only One That Has All Of The Following Industry Experts:

- Dr. George Schussel
- Dr. E.F. Codd
- Chris Date
- Jeff Tash
- Richard Finkelstein
- Larry DeBoever
- Phil Bernstein
- Dave McGoveran
- Herb Edelstein
- Ron Ross
- Michael Stonebraker
- Shaku Atre

Special Presentations By:

Prof. John Donovan
Chairman, Cambridge Technology Group

Max Hopper
Principal, Max D. Hopper Associates

Raymond Lane
President, Worldwide Operations, Oracle Corporation

Dave Duffield
CEO and President, PeopleSoft, Inc.

Dennis McEvoy
Vice President of Products Group, Sybase, Inc.

CO-SPONSORS:
Advisor Publications • Client/Server Computing • Computer Associates International • Computerworld Client/Server Journal • Computron Software, Inc. • Database Programming and Design • DBMS • Data Management Review • Gupta • IBM • Information Builders • Informix • Informix Systems Journal • JYACC • Lawson Software • LBMS • PCWEEK • Popkin Software & Systems • Powersoft • PeopleSoft • RS/The PowerPC Magazine • SunExpert Magazine • SQL Forum Journal

Sponsored by: DCI

6 EXCITING NEW CONFERENCES

Database & Client/Server World

CHICAGO

The 2nd Generation

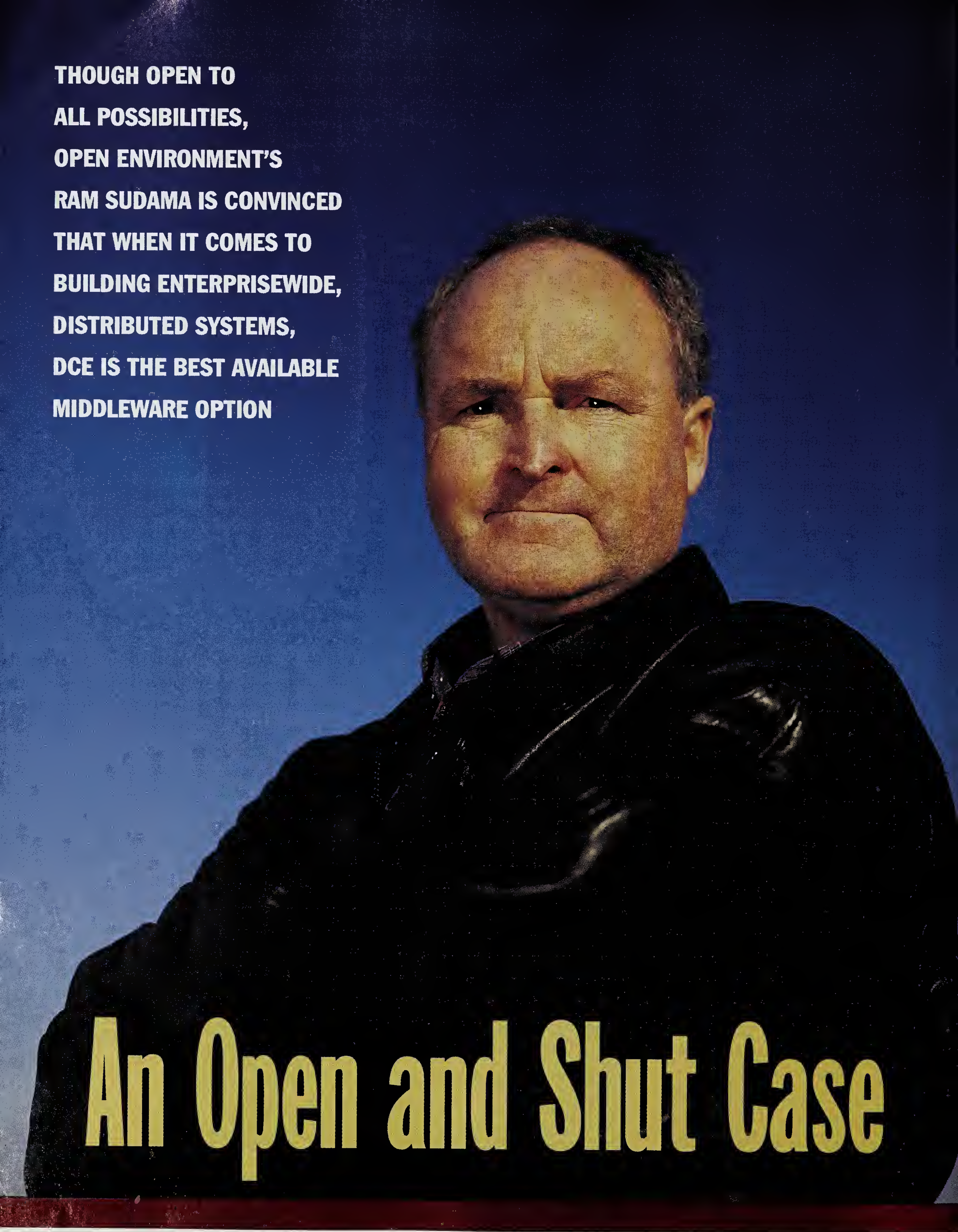
P L U S

Client/Server Application Packages Conference
Presented by META Group

The Most Extensive Coverage Available Anywhere!

For More Information Please Access DCI's Home Page at http://www.DCIexpo.com/ or Call (508) 470-3880 Today!

IZAWC00



THOUGH OPEN TO ALL POSSIBILITIES, OPEN ENVIRONMENT'S RAM SUDAMA IS CONVINCED THAT WHEN IT COMES TO BUILDING ENTERPRISEWIDE, DISTRIBUTED SYSTEMS, DCE IS THE BEST AVAILABLE MIDDLEWARE OPTION

An Open and Shut Case

INTERVIEW

Ram Sudama

Vice president
of technology,
Open Environment Corp.

HEADQUARTERS
Boston

1995 REVENUE
*$30 million**

NUMBER OF EMPLOYEES
275 worldwide

CUSTOMERS
170
(primarily Fortune 500)

**Projected for fiscal year, which ends Dec. 31, 1995; includes recent acquisition of Jarrah Technologies PTY Ltd. in Sydney, Australia*

Maybe it's not glamorous, but it's as complex a function as you can find in distributed computing. And for many large corporations, it's absolutely, positively necessary if they want to tie legacy systems to evolving LAN-based, graphical user interface-driven applications. It's called middleware, and it runs the gamut from remote procedure calls (RPC) to message queuing software.

To some people, Boston-based Open Environment Corp. has helped define the category, with its enterprise-oriented tools that enable application interoperability among systems large and small.

Open Environment came to life in January 1992 as a spin-off of the vaunted consultancy Cambridge Technology Group in Cambridge, Mass. Its founding mandate: educate organizations on how to re-engineer their business processes through component-based systems. Open Environment quickly figured out, however, that it needed tools to practice what it preached.

So after releasing its initial volley of middleware tools in 1993, the company recruited Digital Equipment Corp.'s chief distributed computing scientist, Ram Sudama, as vice president of technology. Largely responsible for the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) RPC, Sudama led Open Environment's charge to create an architecture and tool set for building three-tier applications.

Though a fervent believer in DCE, Sudama is also quite pragmatic. He fleshed out the company's product line to enable Windows and mainframe Cobol programmers to create distributed applications from two-tier client/server and monolithic mainframe applications running over standard TCP/IP networks. He also helped create practical ways to build component-based applications without praying to the object gods.

Now Sudama's looking to differentiate Open Environment's tools from other so-called middleware products. In doing so, Open Environment is now being compared to second-generation application tool vendors such as Forte Systems, Inc. in Oakland, Calif.

CSJ Shouldn't there be applications interoperability right out of the box?

SUDAMA Well, no. Interoperability is not a competitive differentiator, and it's not a benefit to the vendors. If the end user benefits at the expense of the vendors, the vendors will die. And if the vendors benefit at the expense of the consumers, the consumers will die.

CSJ DCE has been deployed at some larger companies, but it's still not mainstream. What's DCE's future?

SUDAMA I believe it's inevitable that [DCE] will succeed. No matter how much you criticize it, my question is always, "Well, what's the alternative?" And nobody has any good answers for that.

CSJ The DCE RPC has achieved some modicum of success in smaller, less than mission-critical applications. Has this prolonged the acceptance of DCE?

SUDAMA It's proof of concept, and we need to move on from there. Building an information infrastructure that can connect every system in the world into one global information system — that's not a change that happens overnight.

CSJ Perhaps most distributed applications can get by with a simple naming and security service. Maybe DCE and its numerous services are overkill?

SUDAMA There are a lot of people who don't need all of the capabilities that DCE provides. Eventually they will.

It's easy to say, "We'll build something very simple that doesn't have all the weight that DCE has." Tomorrow, people are going to be saying, "So where's the security? So where's the internationalization? So where's the transaction processing?"

I think a better approach would be to take something that is inherently more sophisticated that can [later] be used in a simple way. They could use DCE RPC without the directory and security services if they were worried about the weight of those things. That's what Microsoft is doing by using DCE RPC as the basis for all their distributed computing. It's very easy then to plug in the other services as the need arises.

CSJ Though you support other transport mechanisms, you've essentially tied your future to the DCE RPC. Has

Please turn to next page

BY ALAN ALPER

PHOTOGRAPHY BY JACK FOLEY

Continued from page 53

that helped or inhibited your company?

SUDAMA Well, it's certainly helped our growth. But it's not a perception that we really want to have.

DCE RPC is available across all these different platforms. It's a technology on which distributed OLE and CORBA will be layered. It's going to be the foundation for building distributed object environments. It is the lowest common denominator of building any distributed computing environment.

CSJ Some people have said DCE RPC is difficult to master.

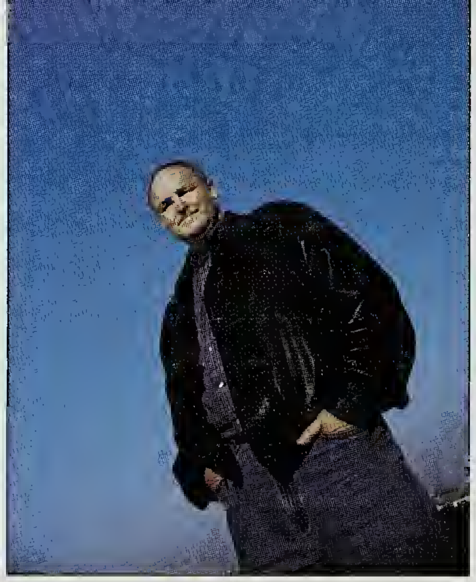
SUDAMA We have Visual Basic programmers and Cobol programmers building DCE applications with our tools, and it takes literally no training for them to do that. You're calling a Visual Basic subroutine, and it's going out over the network over DCE.

[However,] the OSF never designed DCE to be an application development tool. So people look at DCE, and they're comparing it to Visual Basic and saying, "Well, gee, this is real complex." Well, of course it's complex. It was designed to solve a lot of different problems at a very low level.

CSJ Some people call your products middleware, others application development tools or some kind of mishmash.

SUDAMA We're calling [it] intelligent middleware. Intelligent middleware supports partitioning and distribution of application code files. So it inherently supports what we call the three-tier architecture. Intelligent middleware supports the use of business objects to build large-scale information systems. It inherently encapsulates functionality and allows [components] to be reused easily in building larger-scale applications. [And it] supports the use of a wide variety of programming languages.

You can take advantage of object-oriented languages like Smalltalk and C++, and you can actually build applications that integrate components (i.e., a C++ application invoking a Cobol component or a Visual Basic application invoking a Smalltalk component). And finally, it provides capabilities for managing applications.



"I BELIEVE IT'S INEVITABLE THAT [DCE] WILL SUCCEED. NO MATTER HOW MUCH YOU CRITICIZE IT, MY QUESTION IS ALWAYS, 'WELL, WHAT'S THE ALTERNATIVE?' AND NOBODY HAS ANY GOOD ANSWERS FOR THAT."

CSJ So there doesn't need to be a procedural vs. an object-oriented war. There is a way to blend the two.

SUDAMA I'm very much a believer in distributed objects, [but] I'm not a so-called object purist. You can achieve a tremendous amount of software reuse using component-based architectures without necessarily going full object-oriented in the classic definition.

CSJ And the CORBA standard as it stands today doesn't provide object interoperability among heterogeneous environments.

SUDAMA That's exactly my point. Can you build applications that can scale up, that can support interoperability and security and things like that? Not with the products that are out there today.

CSJ What are the biggest unresolved issues in distributed computing today, and what do you think the next few years will bring?

SUDAMA Probably the biggest unresolved issue is distributed objects. I think the next few years will definitely bring us some standardization in this area. We were able to take people from TCP/IP to DCE almost effortlessly. And we think we can take them from DCE RPC to OLE or CORBA or whatever distributed object technology matures.

CSJ Where do you envision Open Environment a couple of years from now, and what do you think you'll be doing?

SUDAMA We are planning to expand, based on acquisitions and mergers, so that we can provide some more complete solutions more quickly. There are tools out there for doing application testing. There are repository tools for storing information about enterprise objects. There are management tools and management applications for doing things like capacity planning.

And there are higher-level CASE-type tools.

I'm spending most of my time doing marketing and education, as well as management. Hopefully, as the company grows, I will be able to spend more time on the development side and on product innovation, which is really my forte.

CSJ No pun intended, right?

SUDAMA Right. ◩

For a more detailed account, see the features section of our @Computerworld on-line service. The URL is http//www.computerworld.com.

CAREERS

RECRUITING, RETRAINING AND RETAINING CLIENT/SERVER EXPERTS

Weird Passages Into IS

From musicians to architects, the path to IS can take surprising turns

BY WILLIE SCHATZ

If Johann Sebastian Bach weren't a math major in disguise, Dave Garets might not be a chief information officer today.

"My parents wanted me to be a concert pianist," said Garets, who played his first concert when he was five years old. But by the time he was 13, he knew he wasn't the tuxedo type. He roamed the coffeehouse circuit after graduating from Texas Tech University while doing time as a journalist, a photographer, an editor and a restaurant manager before becoming a technical marketer at Mountain Bell.

Even though he didn't know anything about computing, it was love at first byte. And thanks to his background in Bach, the affair is still going strong.

"There are a lot of similarities between Bach and computers," said Garets, now CIO at the 65-bed Magic Valley Regional Medical Center in Twin Falls, Idaho. "There's tremendous mathematical complexity between how Bach put his music together and how computers utilize software."

In fact, plenty of client/server practitioners started out on a very different score before discovering that computing is where they wanted to be. But when you speak with these converts, they note the synergies between their former and current careers.

"I know this sounds weird, but [mathematical complexity] is what drew me to computing: the complexities of the flow of thinking and work, the interface between the hardware and software and getting the big picture of how software applications solve business problems," Garets said.

At 14, Roy Altman was also going to be a professional musician. "I wanted to be like [rock stars] Keith Emerson and Rick Wakeman," said Altman, now 38 and a Cortlandt Manor, N.Y.-based computer consultant. In fact, as a member of what he calls "the music squad" in the electronic music department at State University of New York at Albany, Altman could not have cared less about computing. But because he was messing around with the largest Moog synthesizer on the East Coast, he decided to take a basic computer course.

That course was a disaster, Altman said, but after graduation, he tried again. "I took to it like a fish to water," he said. "My background in electronic music was a better preparation for systems analysis than if I had gotten a computer science degree."

Plus, he said, his musical background helps keep him from getting too deeply mired in low-level programming tasks. "It's really about feeling the synergy that makes the whole greater than the sum of its parts," he said.

The desire to combine the parts into a greater whole is what propelled Humberto Salicetti out of architecture and into setting up a computer-aided facilities management system at Deaconess Hospital in Boston. When Salicetti first came to Deaconess, it was to help in the design of the new tertiary care building.

The project "forced me to go into the details of Unix networks and objects. Before I knew it, I developed a new passion," he said.

Salicetti likens architectural planning to constructing an IT system. "You've got to have a basic platform and a backbone that connects all the parts. If it's not [solid], the building won't stay up, and neither will the system."

So is there a Seymour Cray behind every tuba? Probably not. But there is more than just a meeting of the minds.

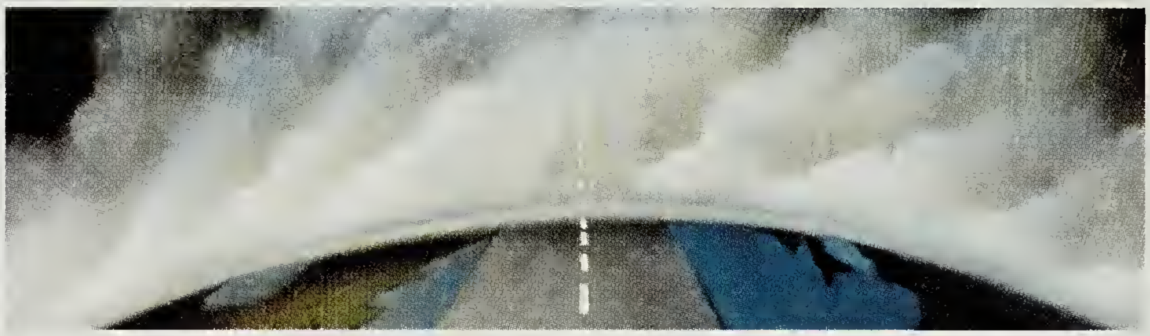
"Cello players make beautiful music out of a very cumbersome instrument," Garets said. "They're willing to pay the price of the grief they get because what they've accomplished was worth it. The same is true of programmers. They make beautiful software out of practically nothing and they don't care what people think. That sounds like Bill Gates, doesn't it?"

Schatz is a freelance writer in Washington.

ILLUSTRATION BY LARRY GOODE

No Other Client/Server Tool Manages Business Change and Complexity Like Magic

Winner — 1995 Droege Developers Competition



Integrating the Future

Managing the Present

Leveraging the Past

The development path you choose determines your company's success. With business practices changing and business environments being reengineered, you need client *and* server application development that stands the test of time. And that can only mean Magic. Magic leverages your legacy IT resources to provide an economical migration path to client/server. It manages your present development needs with an innovative programming paradigm that ensures extremely rapid application delivery and easy maintenance. And Magic integrates the future with fully scalable open architecture that takes applications from tactical to strategic - incorporating new platforms, DBMSs, multiple client/server models and application partitioning scenarios.

The secret of Magic's success is the Magic Engine, an advanced repository of sophisticated application functionality. Driven by a high level, table-driven interface, the Magic Engine lets the developer concentrate on business rules and logic instead of low-level repetitive tasks.

Isn't it time you put Magic to work for your business? For more information and to attend a free Magic seminar, call:

1-800-345-6244

MAGIC
Client and Server Development for Managing Change and Complexity

U.S. Tel: (714) 250-1718, Fax: (714) 250-7404 France Tel: (1) 47 73 90 90, Fax: (1) 47 76 44 36 The Netherlands Tel: 3405 71888, Fax: 3405 71766 U.K. Tel: 01344 303045, Fax: 01344 303024
Germany Tel: (089) 74120-135, Fax: (089) 74120-102 International Tel: (972-3) 538 9292, Fax: (972-3) 538 9333

INSIDE

NEW PRODUCTS
- PowerCerv's PowerBuilder add-on
- IBM's visual programming environment
- Popkin Software & Systems' repository-based development tool
- JYACC's three-tier development environment

Three-tier Pioneers Rate Forte, Dynasty

THE TWO OBJECT-ORIENTED DEVELOPMENT TOOLS DIFFER IN THEIR SUPPORT OF THIRD-PARTY SOFTWARE AND COST

By Kevin Burden

CSJ FIRING LINE

When CableData, Inc. in Rancho Cordoba, Calif., set out to build a client/server application that would scale as high as the number of Americans who need a monthly cable bill, it focused on the two best-known products that were up to the task. One was Forte 2.0 from Forte Software, Inc., which is famous for pioneering multiplatform partitioning. The other was Dynasty 2.0 from Dynasty Technologies, Inc.

Its choice: Dynasty, partially because of its open approach to ancillary tools and partially for its cost, which worked out to be lower than Forte's.

Despite these differences, Forte and Dynasty appear to be cut from a similar cloth. Both are three-tiered, structured development environments, able to generate partitionable, reusable code (in multiple languages) for multiple platforms and databases and supporting many types of communications software.

Both vendors are still on proving ground with their systems. Dynasty has installations at 50 companies, while Forte is installed at 125.

Where they differ is in their policy toward third-party middleware. Dynasty supports it, while Forte has traditionally preferred to build everything on its own. Forte, however, is starting to lighten up in that regard: Release 2.0 subscribes to the Open Software Foundation's Distributed Computing Environment and the Object Management Group's Common Object Request Broker Architecture.

Because Forte includes so much middleware, it attracts companies with multiple and disparate environments. "We still find a benefit in one-stop shopping," said Forte user David St. Clair, president and chief executive officer of MEDecisions, Inc. in Berwyn, Pa. MEDecisions used Forte to develop an application for health and insurance providers to qualify patients for medical procedures. "We have many different clients with different environments. We can't be in a position to match the middleware to all those variations," St. Clair said.

However, Forte's per-user charge (which starts at $250) can push the final cost out of sight for large installations. Its per-developer fee, on the other hand, is cheaper than Dynasty's, at $4,000 to $6,000.

Dynasty costs $7,995 per developer, plus a onetime target platform fee ranging from $12,000 to $35,000.

This evaluation was completed through in-depth interviews with four users of each product. Each user either evaluated or became familiar with both products before choosing one as the production environment.

PROGRAMMING ENVIRONMENT

Forte	A-	A	A	B
Dynasty	A	A	B+	A

Neither environment is for the timid. Because both are object-oriented, developers with some C and C++ experience will be a few giant steps ahead. But while the language may be familiar to object programmers, the libraries won't be, explained Dynasty user Dave Sanders, senior vice president of technology at CableData. It's not that Dynasty is difficult to learn, he said. "There is just a lot to learn."

St. Clair said it took six

Please turn to next page

Each of the eight evaluators (see page 59) graded the application development tools on a five-letter scale. When evaluators could not comment, (-) replaces their grade.

Excellent	A
Good	B
Fair	C
Poor	D
Very Poor	E

Forte's Release 2

Forte Software, Inc., Oakland, Calif.
☎ *(510) 863-3400*

vs.

GUIs	Macintosh, Motif, Windows, Windows NT
SERVER PLATFORMS	Power Macintosh, HP-UX, OpenVMS, OSF/1, IBM AIX, SunOS, Windows NT
DATABASES	DB2/6000, Informix, Microsoft SQL Server, ODBC, Oracle, Rdb, Sybase
LEGACY CONNECTIVITY	RPC-based integration, SQL, supports Netwise, Inc.'s TransAccess Application Integrator series
PRICE	$4,000 to $6,000 per developer, $225+ per user

Dynasty Version 2

Dynasty Technologies, Inc., Lisle, Ill.
☎ *(708) 769-8500*

GUIs	Macintosh, Motif, OS/2 Presentation Manager, Windows, Windows NT
SERVER PLATFORMS	Macintosh , HP-UX, IBM AIX, OS/2, Solaris, SunOS, Windows, Windows NT
DATABASES	DB2, Microsoft SQL Server, ODBC, Oracle, Sybase
LEGACY CONNECTIVITY	Cross Access, EDA/SQL, IBM DDCS, Sybase MDI
PRICE	$7,995 per developer plus a onetime target platform fee of $12,000 to $35,000

Continued from page 57

weeks before his developers felt comfortable with Forte, "but once through the curve, productivity skyrockets."

A key feature of Forte, users said, is its "shadow repository," which lets developers make personal copies of application modules so they can work on them off-site.

"When done, copies are integrated back into the shared repository as the current version," St. Clair said.

Also, every time a shadow is updated, the central repository is updated through replication so others can see the most current version. Dynasty does not support shadow repositories.

Users also touted Forte's integrated design and test mode, a prototyping facility that tests the success of screens as soon as they are designed. "It's great for detecting early design flaws," said one user at a manufacturing company.

Dynasty has added significant new functionality to Version 2.0's development environment. Two major additions are the product's new split-screen developer interface and its automated partitioning assistant, a feature Forte has had for some time.

With the split screen, developers graphically view the object hierarchy in one pane; when they click on an object, the opposite pane displays its methods, process models and other attributes, according to Jim Kent, a developer at the Vancouver Stock Exchange.

Those new to three-tier architectures will welcome Dynasty's new autopartitioning agent, which provides four preset options. But the evaluators said they prefer to rely on their own skills.

"Partitioning has become an art form to our developers. The auto [feature] is best for those new to the concept," said Kevin Malone, vice president of software engineering at Logicom International, Inc.

Despite these new features, neither product can prevent bad design practices. Forte "will definitely let you shoot yourself in the foot," the user at the manufacturing company said. Training is the only savior, evaluators said.

APPLICATION MAINTENANCE

Forte	C^+ - C B-
Dynasty	B C D C

Neither product makes application maintenance easy.

Many complaints centered around the products' inability to monitor application performance. Users said proper tuning was mostly trial and error, and everyone complained that changes to an application required a full reinstall on every server and client.

Forte has made some improvements. Prior to Release 2.0, developers had to redeploy the entire application to each user when a single change was made. Now, only the modified portions need to be reinstalled, although none of the evaluators had Version 2.0 applications in production to test it.

More management help is on the way. Both Forte and Dynasty have pledged to support Tivoli Systems, Inc.'s Application Management Specification, which allows applications developed with the specification to be managed from Tivoli's management environment. Capabilities will include software distribution, event monitoring to gather performance data and creation/maintenance of user account information.

PORTABILITY

Forte	A A B A
Dynasty	A B A- B

Users had no trouble porting server code to different platforms supported by Dynasty and Forte. But graphical user interfaces (GUI) are a different story.

Bill Gonch, project manager at a large consumer products company, said if you don't rigorously follow Forte's GUI rule book, "you'll start seeing buttons coming up in different sizes and locations."

Dynasty users said porting

its GUI is an involved process, but they didn't report any problems or bugs.

TESTING/DEBUGGING

Forte	B B B A
Dynasty	B B C B-

Forte received good grades here because of the improvements made to its Release 2.0 debugging tools, whereas Dynasty just started offering debuggers. However, Forte's debugger was called buggy by two evaluators. "It tends to miss a lot," St. Clair said.

At the same time, Release 2.0 does include a scripting tool for regression testing. As companies move from developing applications to maintaining them, integrated support for regression testing can be a "savior," as Gonch called it. "We need better ways to stress-test server partitions, and this scripting tool might be it," he said.

PERFORMANCE

Forte	A B A B+
Dynasty	A A A A

Both Forte and Dynasty evaluators were happy with the performance of their production applications. And while all said development response time could be better, they still felt overall performance deserved excellent grades.

The common complaint was that code generation was slow. "It's hard to tell if you have time for a cup of coffee or if you should go to lunch," Dynasty user Sanders said. Forte users had similar complaints but said they don't consider it a drawback.

Much of an application's performance is ruled by its overall design and how it is partitioned. Unfortunately, only training and experience will help there. Forte "won't stop you from placing a database partition on a remote node, letting you do all your database access over the network," said Mark Joyce, supervisor of fiber systems engineering at Corning, Inc. in Wilmington N.C. Neither will Dynasty, according to its users.

Proper tuning requires developers to manage an application's partitioned components. Forte's Repartitioning Interface does just that and was pointed to by two evaluators as a contributor to its high grades. The interface displays a map of the physical environment, including the application's components and their location. Users can adjust application performance without altering code by dragging and dropping components to different nodes.

Affecting Dynasty's performance grades more than any other factor is its support for Novell, Inc.'s Tuxedo transaction processing monitor. Transaction processing monitors speed an application's performance by balancing the workload across system resources. "Scalability and performance issues are huge for us. Dynasty's support for a known TP monitor is why we chose it over Forte," Malone said.

Forte added support for Transarc Corp.'s Encina transaction processing monitor in Release 2.0, and none too soon. Users said Forte's own proprietary monitor, bundled in earlier versions, wasn't robust enough. "Forte's been late to the game here," Malone commented. ◪

Burden is Computerworld*'s senior researcher, Firing Line/Scorecard.*

FORTE RESPONDS

APPLICATION MAINTENANCE

Release 2 allows customers to reinstall individual partitions and libraries without reinstalling them all. Users can also move partitions among different machines without deinstalling the application. Forte automates installation with a command that calls all needed compilers and linkers to complete the installation.

PERFORMANCE MONITORING

Release 1 displayed some statistics on each partition's message traffic on a central console. Release 2 enhanced its abilities to provide feedback on CPU and memory usage, number of message bytes and lock statistics on a node and partition basis.

CODE GENERATION

Code generation was slow in Release 1, but users saw an improvement in Release 2. A Compile Server reduces generation time from one or two minutes per file to less than five seconds.

FORTE USERS

- **Corning, Inc:** Six-user, five-developer product data system.
- **MEDecisions:** 120-user, 11-developer patient qualification system.
- **Large tobacco/food products firm:** 200-user, 1,000-developer credit system.
- **Large pharmaceuticals firm:** Three-user, three-developer manufacturing/operations system.

DYNASTY USERS

- **CableData, Inc.:** Five-user-per-station, five-developer subscriber management system.
- **Vancouver Stock Exchange:** 15-developer securities system.
- **International telecommunications firm:** 20-developer cellular management system for hundreds of users.
- **Logicom International, Inc.:** 200-user, four-developer customer management system.

DYNASTY RESPONDS

APPLICATION MAINTENANCE

Developers need only regenerate the business object to be updated. The resultant code is compiled into an executable, which is distributed to the necessary server machine. Dynasty's links to Tivoli/Courier automate this process. Dynasty's integration with Tuxedo provides production-level application management facilities such as rollback, recovery, security and load balancing.

PERFORMANCE MONITORING

Dynasty believes performance monitoring should not be done in a proprietary environment, so we partner with other vendors. Our ability to generate Tuxedo code provides tight integration with a full array of application management services.

CODE GENERATION

Dynasty's Generation Server, which was newly released in September, allows developers to off-load the code generation process from their workstations to a shared server. This enables developers to continue development work while previously constructed objects are generated on the server. After generation, the source code is returned to the developers' machine, along with an error listing.

Time-savers, Modelers and GUI Builders

POWERBUILDER ADD-ONS

POWERPERFORMANCE SERIES

PowerCerv
Tampa, Fla.

WHAT: PowerCerv's four-tool suite extends the performance of Powersoft Corp. PowerBuilder applications.

PadLock has embedded, client-side, object-level security that lets users secure PowerBuilder applications without taking the system down. PowerTool 4.1 is a PowerBuilder object-class library. This version includes a data-driven navigation methodology. FlowBuilder lets you write workflow scripts that aren't hard-coded into the applications. BatchBuilder provides asynchronous and batch processing, job scheduling and workload management.

WHERE: All operating systems that support PowerBuilder; all SQL relational databases; Sun Microsystems, Inc., IBM and Hewlett-Packard Co. Unix servers.

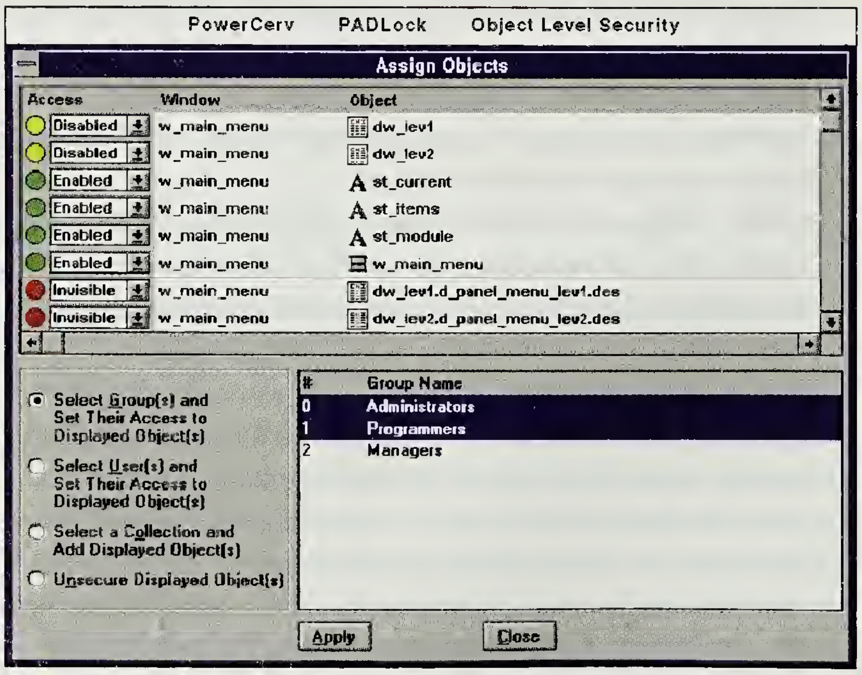
WHEN: Now.

HOW MUCH: PadLock costs $2,300 per server, while PowerTool 4.1 is $1,200 per developer. Volume discounts are available for both. FlowBuilder and BatchBuilder will be available in upcoming months as separate releases.

USER FEEDBACK: PowerCerv's stringent code-naming standards enhance readability and maintenance of the program, said Louis Abeyta, applications development consultant at Sandia National Laboratories in Albuquerque, N.M. "PowerCerv does an excellent job exploiting the object-oriented programming paradigm. And there is no performance degradation due to inheritance."

PadLock, he said, is a time-saver. "Without a tool like PadLock, you would spend a lot of development time trying to implement security."

PHONE: (813) 226-2378



PowerCerv PADLock Object Level Security

Assign Objects

Access	Window	Object
Disabled	w_main_menu	dw_lev1
Disabled	w_main_menu	dw_lev2
Enabled	w_main_menu	st_current
Enabled	w_main_menu	st_items
Enabled	w_main_menu	st_module
Enabled	w_main_menu	w_main_menu
Invisible	w_main_menu	dw_lev1.d_panel_menu_lev1.des
Invisible	w_main_menu	dw_lev2.d_panel_menu_lev2.des

● Select Group(s) and Set Their Access to Displayed Object(s)
○ Select User(s) and Set Their Access to Displayed Object(s)
○ Select a Collection and Add Displayed Object(s)
○ Unsecure Displayed Object(s)

#	Group Name
0	Administrators
1	Programmers
2	Managers

PadLock provides security for PowerBuilder without development

VISUAL PROGRAMMING TOOLS

VISUALGEN VERSION 2.0

IBM
Somers, N.Y.
http://www.software.ibm.com

WHAT: This version of IBM's client/server visual programming environment adds new graphical user interface (GUI) features that IBM said result in a tenfold increase in development productivity over the previous version.

Version 2.0 also includes integrated testing, which lets developers do prototyping early in the development process. Plus, integration with IBM's TeamConnection for OS/2 provides developers with a shared repository for application components, configuration management and an automated build process.

VisualGen, which generates C++ and Cobol code, also has multimedia extensions and support for OS/400, IMS and CICS/6000.

WHERE: OS/2 and Windows clients; multiple IBM servers, including OS/2, CICS/6000, OS/400, AIX, MVS, VSE/ESA and CICS OS/2; and multiple databases including Oracle Corp.'s Oracle7, VSAM, Sybase, Inc.'s Sybase 4.5, IMS/DB, DB2 and any Open Database Connectivity database.

WHEN: Now.

HOW MUCH: $3,999 for the first license, $3,599 for each additional license. Upgrades cost $719 for the first license, $649 for each additional one.

USER FEEDBACK: The photocopier business at Eastman Kodak Co. in Rochester, N.Y., began using VisualGen in June to develop a just-in-time manufacturing process, said Jim Cantin, system architect. So far, the group has completed one Windows-based application, which builds manufacturing schedules based on customer delivery date and the time it takes to build and transport the copier.

Cantin chose VisualGen mainly for its platform support: Much of the needed data still resides in stovepipe fashion under DB2 and IMS, which VisualGen applications can access via IBM's Message Queuing (MQ) middleware. "The delivery of the message is guaranteed so you don't worry about the communications stuff, which kills you in client/server," Cantin said. In the future, MQ will help access additional platforms, including Oracle and Sun.

But the testing facility "is one of its greatest strengths," Cantin said. It enabled him to test the application via interpreted code in an OS/2 LAN environment. "When you're convinced [the application is ready], you generate it out to different platforms," he said.

Cantin said he can't compare performance because he never used VisualGen 1.0. However, he said, "you always want it to be quicker, but so far users have accepted what we've given them."

PHONE: (800) 426-3333

REPOSITORY-BASED TOOLS

SYSTEM ARCHITECT 3.1

Popkin Software & Systems, Inc.
New York

WHAT: This version of Popkin's repository-based development tool features enhanced data modeling, object-oriented analysis and design and reporting capabilities.

System Architect can now automatically generate a logical data model from a physical model while keeping the two independent. Multiple physical models can target different database management systems, and based on the target DBMS, automatic data types are mapped from the logical to the physical model.

This version also provides version control via a link to Intersolv, Inc.'s PVCS management control software. Project staffers can store their encyclopedias with identifying data, check in/check out or freeze any repository object. Also new is a graphical user interface (GUI) reporting tool; an opening dialog box that lets users pick methodologies and diagram types; a new screen and Microsoft Corp.'s Visual Basic forms prototyping option; a spell checker; a graphical undo command; rules support for Booch '94; and on-line tutorials.

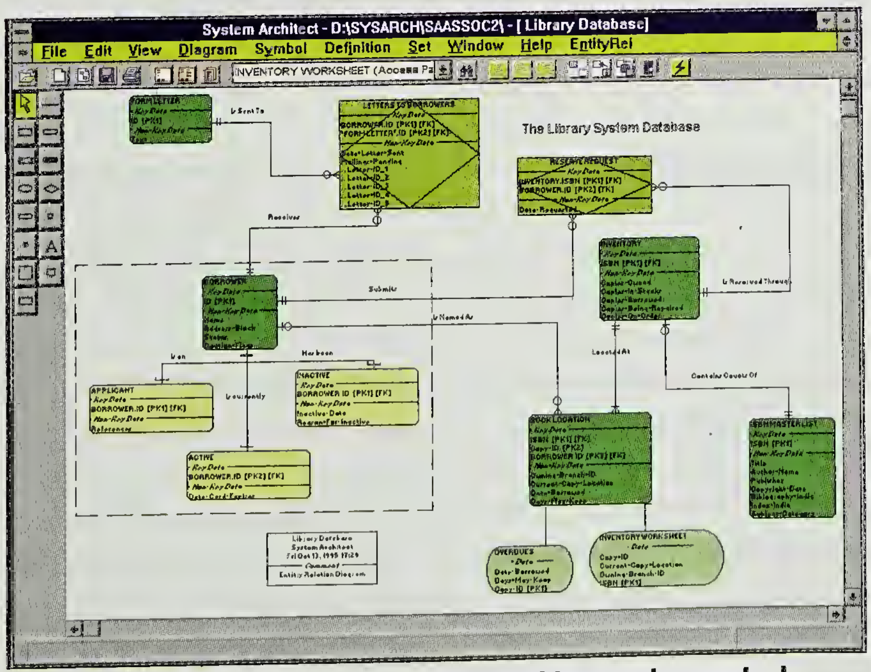
WHERE: Microsoft's Windows 3.1, Windows NT and Windows 95; IBM's OS/2.

WHEN: Now.

HOW MUCH: $1,395 for a single-user version; $2,940 for a network version (first two copies).

USER FEEDBACK: System Architect's new GUI-based report writer makes generating customized reports less cumbersome, according to Bob Huard, project leader at Bank of Canada. "In the previous version, I didn't understand the reporting capabilities. Now with the GUI front-end feature, report writing is much less complex," he said. Huard said the updated diagram configuration is more logical as well. "Before, you had to select individual diagram types," he said. "Now diagrams are grouped into methodologies, which saves time and makes errors less frequent."

PHONE: (212) 571-3434



Popkin's System Architect now provides version control

THREE-TIER ENVIRONMENTS

JAM 7/TPI

JYACC, Inc.
New York
http://www.jyacc.com

WHAT: This version of JYACC's three-tier development environment brings two new capabilities to the party: With TPI/Server, developers can construct application servers using a graphical user interface; with TPI/Client, they can use wizards to generate client screens to support complex operations, such as master-detail/subdetail transactions, without coding.

TPI/Server also links JAM's scripting language and database interface facilities with Novell, Inc.'s Tuxedo on-line transaction processing monitor. TPI/Client links JAM's front-end capabilities with Tuxedo's client facilities.

WHERE: Clients include Microsoft Corp.'s Windows and Unix, with IBM's OS/2 Warp, Windows 95 and Windows NT planned. Unix servers include Sun Microsystems, Inc., IBM, The Santa Cruz Operation, Digital Equipment Corp., Hewlett-Packard Co. and UnixWare. Windows NT Server is planned.

WHEN: Now.

HOW MUCH: A client license is priced at $750 for Windows, $2,000 for Unix. A server license costs $4,000 per server.

USER FEEDBACK: The Florida Department of Revenue in Tallahassee is using JAM 7/TPI to move its tax registration system from Unisys Corp. 2200 machines to an Oracle Corp.-based client/server system as part of an overall re-engineering project.

The best parts of JAM 7 are its cost (no runtime fees) and sophisticated programming functionality (especially compared with other portable development tools).

"A lot of the portable client/server products . . . concentrate on being portable and are not robust in their programming environment," said Bill Childers, client/server architect. He also lauded JAM's close ties with Tuxedo. "We'd been reading that if you want to develop with a transaction monitor, it will double your development time," he said. But JAM 7 minimizes the need to learn new languages or Dynamic Link Libraries.

That's because in JAM, access to Tuxedo is through its own language. With others, "I'd have to write an exit, learn the different calls and do it in C code," Childers said. Plus, once outside the tool environment, he'd lose tool-specific features such as dynamic partitioning.

JAM's partitioning capabilities also make it easier to coordinate developer teams, especially if the team is working on multiple tiers. "If the database isn't performing up to par and I need to tune it, I can do that without consulting with the other developers," he said. Very important to this government agency, Childers said, is partitioning. "You never know how much money you're going to get each year, so you need a way to do thin clients or a way to partition."

PHONE: (212) 267-7722

Written by Carla Catalano, a freelance writer in Ashland, Mass., and Mary Brandel, Computerworld Client/Server Journal*'s senior editor.*

COMPANIES IN THIS ISSUE

Page number refers to page on which story begins

A

American Cyanamid Co., **13, 18**
Aramco Services Co., **41**
Arizona Public Service Co., **44**
AT&T Corp., **41**

B

Bank of Canada, **61**
BankAmerica Corp., **28**
Bankers Trust Co., **24**
Brightpoint, Inc., **13**

C

CableData, Inc., **57**
Charter Investment Group, **11**
Chemical Banking Corp., **24, 27**
Client/Server Technologies, Inc., **28, 32**
Coopers & Lybrand, **44**
Corning, Inc., **35, 57**

D

Deaconess Hospital, **55**
Delmarva Power & Light Co., **38**
Dynasty Technologies, Inc., **28, 57**

E

Eastman Kodak Co., **60**
Elf Atochem North America, Inc., **18, 48**

F

First Chicago Corp., **24**
First Union Corp., **27**
Florida Department of Revenue, **28, 61**
Forte Software, Inc., **28, 35, 52, 57**

H

Helix Health Systems, **38**

I

InSync, **30**

J

J. M. Huber, **48**
J. P. Morgan & Co., **27**
JC Penney Co., **12**
JDP Computing Services, **30**
JYACC, Inc., **28, 61**

L

Lloyds Bank PLC, **27**
Logicom International, Inc., **57**
Lyondell Petrochemical Co., **18**

M

Magic Valley Regional Medical Center, **55**
MEDecisions, Inc., **57**
Merrill Lynch & Co., **24**
Monarch Information Networks, Inc., **41**

N

Nabisco, Inc., **13**
Nicholas Applegate Capital Management, **24**

O

Open Environment Corp., **52**
Optimal Networks, Inc., **38**
Orange County, Calif., **24**

P

PanCanadian Petroleum Ltd., **38**
Picom, **34**
Plant-Wide Research Group, **18**
Popkin Software & Systems, Inc., **61**
PowerCerv, **60**

R

Risk Management Technologies, **27**

S

Sandia National Laboratories, **60**
SAP AG, **18, 38, 44, 48**
ServiceWare, Inc., **63**
Systems and Networks, Inc., **38**

T

Texas Instruments, Inc., **44, 63**
The Chase Manhattan Bank NA, **47, 48**
The Dun & Bradstreet Corp., **48**

U

University of New Hampshire, **63**
US West, **12, 48**

V

Vality Corp., **48**
Vancouver Stock Exchange, **57**
Varian Associates, Inc., **18**
Vicom Multimedia, Inc., **46**

W

Weyerhaeuser Corp., **11**

Computerworld subscribers:
For changes to your mailing address, please write to Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043 and include your address label (or the information appearing on the label). You can also call us at (800) 669-1002 or (614) 382-3322 (outside the U.S.).

Conferences

■ **SOFTWARE MARKETING EXECUTIVE FORUM**
Aspen, Colo., Dec. 3-6
Meet the industry's top software executives. Contact: Kawalek & Associates, San Francisco, Calif. (415) 296-7744.

■ **DB/EXPO**
New York, Dec. 4-8
Contact: Blenheim NDN, Mountain View, Calif. (415) 966-8440.

■ **DATABASE & CLIENT/SERVER WORLD**
Chicago, Dec. 5-7
Topics include managing your client/server enterprise. Contact: DCI, Andover, Mass. (508) 470-3880 or E-mail confreg@dciexpo.com.

■ **USENIX 1996 TECHNICAL CONFERENCE**
San Diego, Jan. 22-26, 1996
Contact: Usenix Conference Office, Lake Forest, Calif. (714) 588-8649 or E-mail conference@usenix.org.

■ **DATA WAREHOUSING CONFERENCE**
Orlando, Fla., Feb. 6-8, 1996
The show has five conference tracks, including data warehousing infrastructure and decision-support system/executive information system information delivery. Contact: DCI, Andover, Mass. (508) 470-3880 or E-mail dciconf1@aol.com.

■ **UNIFORUM '96**
San Francisco, Feb. 12-16, 1996
This conference will feature a CEO address from IBM's Lou Gerstner on Feb. 14. Contact: Softbank Comdex, Needham, Mass. (617) 433-1500.

Whirling With Win 95

BY JEREMY SCHLOSBERG

Windows 95 is the Zsa Zsa Gabor of operating systems: famous for being famous more than anything else. But this triumph of image over substance is less than good news for the help desk. Power users are always itching to move beyond entrenched technology, and Windows 95 megahype has more people than ever believing they are power users.

The fun stuff begins when technicians discover that a lot of the little tricks they developed for Windows 3.x "relied on the fact that you already had DOS there," said Howard Marks, chief scientist at TigerTeam, a South Norwalk, Conn., consulting firm. For example, you can't just make a copy of a Windows 95 application and copy it to a workstation, as you could with Windows 3.x. That's because to Windows 3.x, the only thing that made one machine different from another was the video driver. "Every workstation is different as far as Windows 95 is concerned," Marks said.

In a nutshell, there are going to be a lot of questions and no more of what Jeff Pepper calls "Hey, Joe" support, when a user spins in his chair and asks, "Hey, Joe, how do I do such and such?"

There are few Joes familiar with Windows 95, so "all the calls go to the help desk," said Pepper, chief executive officer at ServiceWare, Inc., an Oakmont, Pa., maker of on-line technical support knowledge bases. "That alone overwhelms any technical difference between Windows 95 and Windows 3.1."

So what's a corporate help desk to do if self-professed power users start implementing Windows 95 before the organization is ready, willing or able to support it? Three approaches have emerged: Fake 'em out, hold 'em back or slow 'em down.

Three ways help desks can handle Windows 95 users

The **"Fake right, go left"** approach means supporting Windows 95, even though it's not officially sanctioned. "Right now, we're saying that Windows 95 is not supported," said a technical support supervisor at a Big Six accounting firm who requested anonymity. He added that he is hoping not to have to deploy Windows 95 officially until next spring or summer. And yet his firm already has 20 technicians trained in Windows 95 support.

If a call comes in, "We'll give it a good faith effort after all the problems in supported environments are handled," he said.

And then there's the **"Head 'em off at the pass"** strategy. Philip Verghis, a computer consultant in the consulting services section of the Department of Computing and Information Services at the University of New Hampshire, has been evaluating Windows 95 since it entered beta testing, but technicians, while technically ready to support it, aren't.

Instead, they're offering a detailed report that carefully explains their manifold reasons why not. For instance, there's a problem with the file and print services for Novell, Inc.'s NetWare that can potentially allow a single user with Windows 95 on his machine to accidentally impersonate a NetWare server.

Second, there's no dual-boot option, which means that to load Windows 95, you have to either overwrite all your existing Windows files or customize the installation and manually migrate all your Windows 3.1 applications and files.

Anyone who still wants to check out Windows 95 is then invited to see it in person. Ultimately, when nontechnical users hear everything Verghis has to say, "they don't want to deal with it," Verghis said.

The third approach might be called **"Slow and steady wins the race."** "We're suggesting to the different businesses that they move to the product as their needs dictate," said Evan Duval, team leader for technical support in information systems and services at Texas Instruments, Inc. in Plano, Texas. For instance, because memory management issues with Windows 3.x seem most acute for notebook users, business units with lots of notebook users on the network may migrate most quickly.

Understanding that help desk personnel can be expected to effectively support only so many major operating systems, TI tech support has been divided into two distinct teams that handle either NT or Windows 95 but not both.

Early involvement with Windows 95, dating back to the Chicago days, was key to help desk readiness, Duval said. The need for rapid help desk training, however, is not translating into a fast organizational migration to Windows 95.

"We're not pushing people to move," Duval said. "We're simply taking the stance that if they need to use it, we're going to help them."

Schlosberg is a freelance writer in Cincinnati.

ILLUSTRATION BY CHRIS PYLE

The Back Page

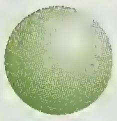
THE 5TH WAVE

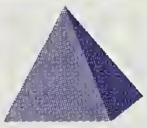
"CLEARLY, THE ISSUE OF MIDDLEWARE NEEDS TO BE ADDRESSED AS SOON AS POSSIBLE."

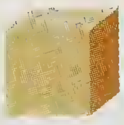
WHERE ARE YOU IN THE CLIENT/SERVER EVOLUTION?

HOW TO PLAY

GAME PIECES


PEOPLE


PRODUCT


PROCESS

To be successful at the client/server game, you must achieve a balance between the three P's: people, product and process. To play, move game pieces onto the area of the board that corresponds with your client/server effort. You may be lost in the wilderness or be a little further along the distributed computing path. As you move toward existence in a client/server metropolis, move your game pieces accordingly. Along each path, there is an anxiety meter for you to self-rank your organization. As you get closer to the goal of client/server civilization, where the three P's live together in harmony, your anxiety level should go down.

START HERE

- No mental map
- Little value awareness
- Fire fighting
- Primitive tools

WILDERNESS

ANXIETY METER: HIGH ✓ / MOD / LOW

"Help, I'm lost in the wilderness of client/server!"

- Fuzzy mental map
- Spotty training and accountability
- Dogs' breakfast of tools
- Awareness of pain

FRONTIER OUTPOST

ANXIETY METER: HIGH ✓ / MOD / LOW

"I think I'm getting the idea here!"

RURAL VILLAGE

- High-level mental map
- Understood by IT
- Appropriate tools selected
- Appropriate behavior specified
- Implementation in process
- Behavior change programs in process — rein in those cowboys

ANXIETY METER: HIGH / MOD ✓ / LOW

"Hey, things are semicivilized here!"

METROPOLIS

- Cost and value understood by all
- Cost and value of distributed systems management
- Appropriate tools selected, implemented and used
- Appropriate personnel allocated, trained, made accountable for and evaluated

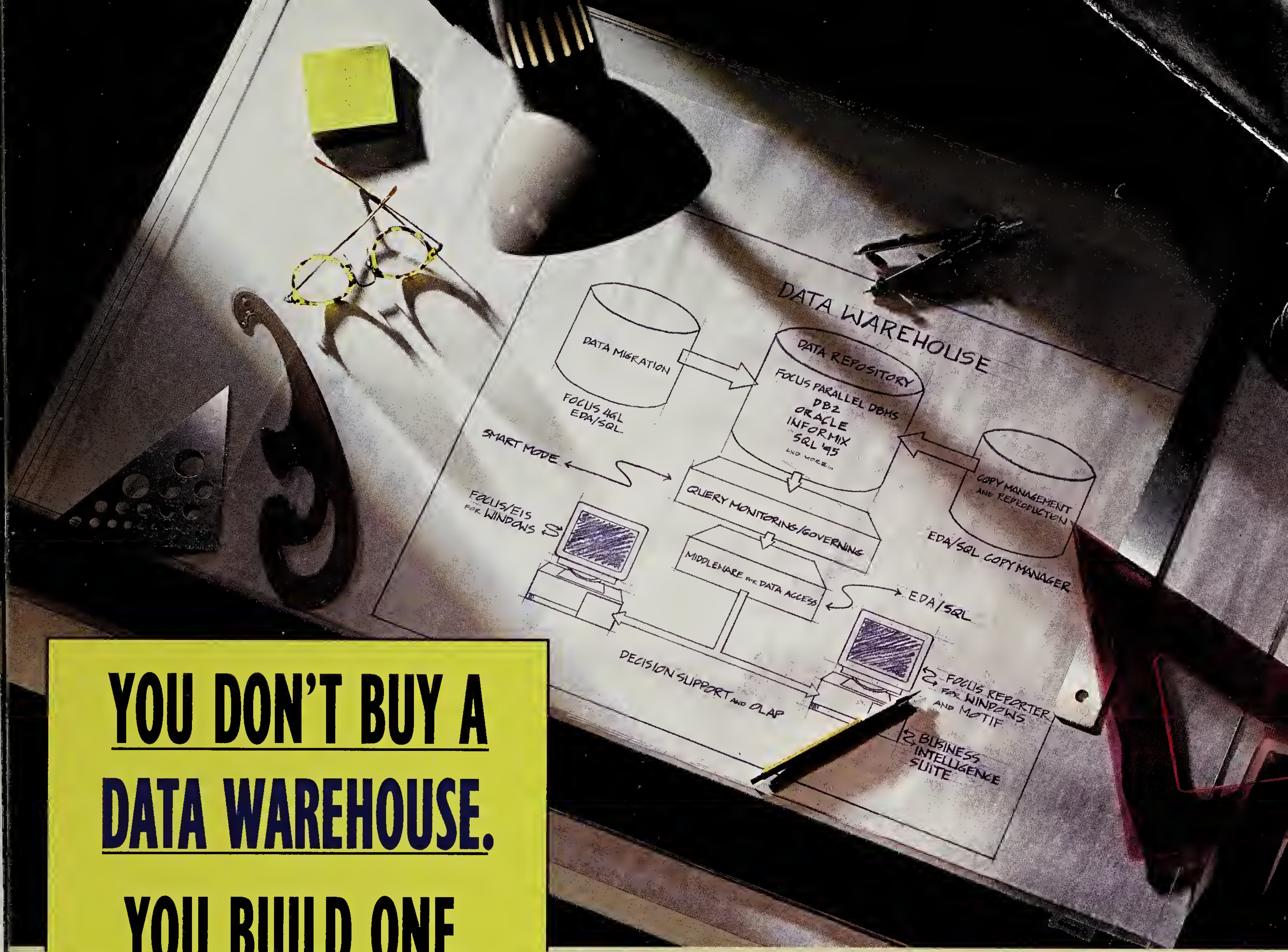
ANXIETY METER: HIGH / MOD / LOW ✓

"Hurray! I've finally reached civilization!"

FINISH

Source: Cambridge Technology Partners, Cambridge, Mass.

How do you stack up vs. the competition? Fax your game board to (508) 875-8931 to find out.


DATA WAREHOUSE
DATA MIGRATION
FOCUS 4GL
EDA/SQL
DATA REPOSITORY
FOCUS PARALLEL DBMS
DB2
ORACLE
INFORMIX
SQL '95
AND MORE...
SMART MODE
QUERY MONITORING/GOVERNING
COPY MANAGEMENT AND REPRODUCTION
EDA/SQL COPY MANAGER
FOCUS/EIS FOR WINDOWS
MIDDLEWARE FOR DATA ACCESS
EDA/SQL
DECISION SUPPORT AND OLAP
FOCUS REPORTER FOR WINDOWS AND MOTIF
BUSINESS INTELLIGENCE SUITE

YOU DON'T BUY A DATA WAREHOUSE. YOU BUILD ONE.

Creating a data warehouse is like building a new home on unchartered territory... you don't know what you're getting into until you start digging the foundation. But you can greatly increase your chances for success by following a few basic rules.

RULE #1: HIRE AN EXPERIENCED ARCHITECT

Data warehousing is simply a new name for accessing, migrating, and staging data for optimum decision support applications...all the things Information Builders has been doing longer and better than any other software/consulting firm in the industry. Our experienced staff of professionals provide complete consulting, planning, implementation and training from more than 35 offices in North America.

RULE #2: LEARN BEFORE YOU DESIGN

Why attempt to restage and restructure data until you learn how it's going to be utilized by end users? Information Builders' EDA/SQL® middleware technology offers your users transparent access to virtually any database on any computer platform. Once they have access to the data, you can analyze how they use it and pinpoint any potential problems. And with our EDA/SQL SmartMode™ system, you can monitor all database activities so you can develop your most important resources first, design systems that make sense, and enjoy immediate benefits. Best of all, EDA/SQL can extend data access beyond your warehouse database, transforming your entire enterprise into a "Virtual Data Warehouse."

RULE #3: USE THE BEST TOOLS

Thousands of the world's leading corporations use Information Builders' FOCUS 4GL for data migration and staging on more than 35 computer platforms. Our EDA/SQL Copy Manager lets you replicate data from over 60 databases and EDA/SQL Catalog Manager makes managing meta data easier than ever before. Most importantly of all, our FOCUS Reporter for Windows and FOCUS SMP (Symmetric Multi-Processor) provide a level of performance for client/server reporting and decision support simply not available with today's relational tools.

RULE #4: START ASKING QUESTIONS AND YOU'LL START GETTING ANSWERS!

If a data warehouse strategy is in your future, contact your local Information Builders branch office or call us. We'll answer your questions, register you for our FREE Data Warehouse seminar, or set up an appointment for a consultation and evaluation. **1-800-969-INFO.** In Canada call 416-364-2760.

USER'S CHOICE AWARD
1994
SOFTWARE
magazine
SOFTWARE SERVICE & SUPPORT
[illegible]

Information Builders

FOCUS and EDA/SQL are trademarks of Information Builders, Inc., NY, NY 212-736-4433 E-mail: info@ibi.com WWW: http://www.ibi.com
All other trademarks are the property of their respective owners.

PATROL: Bringing harmony to complex environments

Tune your applications, databases and underlying resources for maximum performance

The key to success in managing a complex open systems environment is the ability to conduct centralized monitoring and administration. To establish true organizational harmony, you need to see and control the entire score.

PATROL provides a top-down view of your diverse applications, databases and underlying resources. PATROL's automated problem identification and resolution capabilities are on the job around the clock, helping you maintain peak performance—even when you're not there.

PATROL provides product-specific expertise to leverage your skills across a wide range of industry-leading databases and applications. PATROL can even help you manage applications developed in-house.

PATROL's patent-pending, distributed architecture—utilizing console independent agents and plug-in Knowledge Modules—allows it to scale across any size enterprise. And PATROL is self-tuning, so it won't ever drag down system performance.

PATROL can help you set the tone for efficiency, reliability and productivity. For more information about PATROL, call us at 800 811-6763 or 713 918-8800 (ext. 137). Or visit our home page at http://www.bmc.com.

BMC® SOFTWARE

BMC Software offices are located in Australia, Belgium, Denmark, France, Germany, Italy, Japan, the Netherlands, Spain and the United Kingdom. Distributor offices in 25 countries. BMC Software and the BMC Software logo are registered trademarks of BMC Software, Inc. in the USA and in other select countries. ® and ™ indicate USA registration. All other products mentioned are either trademarks or registered trademarks of their respective companies. © 1995, BMC Software, Inc. All rights reserved.